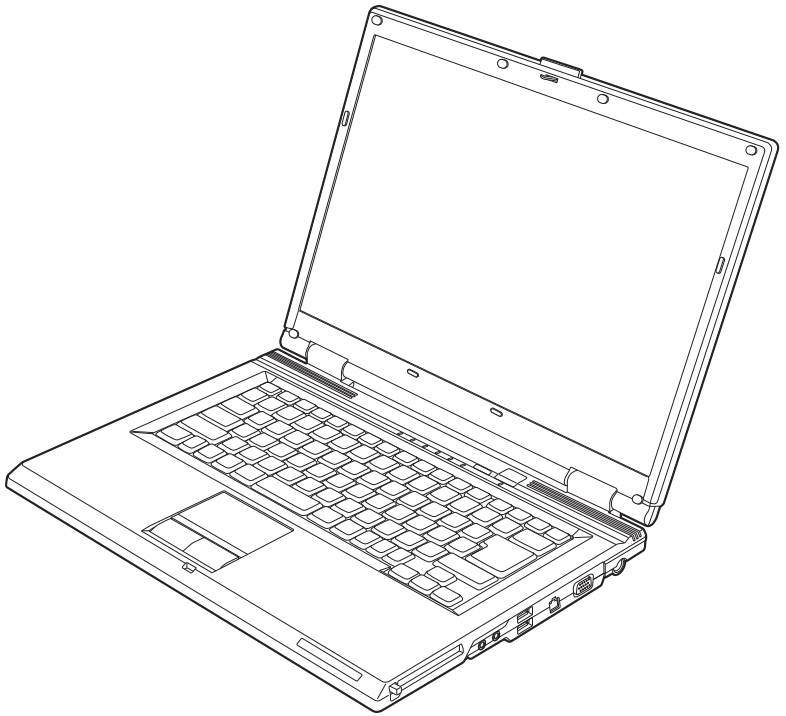
User's Guide

Learn how to use
your Fujitsu LifeBook
V700 notebook



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WARNING

HANDLING THE CORD ON THIS PRODUCT WILL EXPOSE YOU TO LEAD, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

WASH HANDS AFTER HANDLING.

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DECLARATION OF CONFORMITY

according to FCC Part 15

Responsible Party Name:	Fujitsu Computer Systems Corporation
Address:	1250 E. Arques Avenue, M/S 122 Sunnyvale, CA 94085
Telephone:	(408) 746-6000
Declares that product:	Base Model Configuration: LifeBook V700 notebook Complies with Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC rules. Operations are subject to the following two conditions: (1) This device may not cause harmful interference, (2) This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT SAFETY INSTRUCTIONS

This unit requires an AC adapter to operate. Use only UL Listed I.T.E. Class II Adapters with an output rating of 19 VDC, with a current of 4.22 A (80 W).

AC adapter output polarity:

When using your notebook equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Avoid using the modem during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the modem to report a gas leak in the vicinity of the leak.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
- To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunication Line Cord.
- For TV tuner use: To protect from overvoltages and transients on the Cable Distribution System, be sure that the outer shield of the coaxial cable is connected to earth (grounded) at the building premise as close to the point of cable entrance as practicable, as required per NEC Article 820.93, ANSI/NFPA 70: 2005. If you have questions about your CATV installation, contact your service provider.

SAVE THESE INSTRUCTIONS

For Authorized Repair Technicians Only

DANGER OF EXPLOSION IF LITHIUM (CLOCK) BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTION.

FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE AND RATING FUSE.

System Disposal

Hg

LAMP(S) INSIDE THIS PRODUCT CONTAIN MERCURY AND MUST BE RECYCLED OR DISPOSED OF ACCORDING TO LOCAL, STATE, OR FEDERAL LAWS.

Recycling your battery

Over time, the batteries that run your mobile computer will begin to hold a charge for a shorter amount of time; this is a natural occurrence for all batteries. When this occurs, you may want to replace the battery with a fresh one*. If you replace it, it is important that you dispose of the old battery properly because batteries contain materials that could cause environmental damage if disposed of improperly.

Fujitsu is very concerned with environmental protection, and has enlisted the services of the Rechargeable Battery Recycling Corporation (RBRC)**, a non-profit public service organization dedicated to protecting our environment by recycling old batteries at no cost to you.

RBRC has drop-off points at tens of thousands of locations throughout the United States and Canada. To find the location nearest you, go to www.RBRC.org or call 1-800-822-8837.

If there are no convenient RBRC locations near you, you can also go to the EIA Consumer Education Initiative website (http://EIAE.org/) and search for a convenient disposal location.

Remember – protecting the environment is a cooperative effort, and you should make every effort to protect it for current and future generations.

* To order a new battery for your Fujitsu mobile computer, go to the Fujitsu shopping site at www.shopfujitsu.com in the US or www.fujitsu.ca/products/notebooks in Canada.

** RBRC is an independent third party to which Fujitsu provides funding for battery recycling; RBRC is in no way affiliated with Fujitsu.

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Preface

About This Guide

The LifeBook V700 notebook from Fujitsu Computer Systems Corporation provides desktop performance with a fast, Intel® Pentium® Dual Core processor. Your notebook has a built-in 15.4" TFT WXGA color display. This system brings the computing power of desktop personal computers (PCs) to a portable environment.

Your computer comes with Microsoft Windows Vista Home Premium operating system pre-installed.

This manual explains how to operate your LifeBook notebook's hardware and built-in system software.

Conventions Used in the Guide

Keyboard and on-screen keys appear in brackets. Example: [Fn], [F1], [ESC], [ENTER] and [CTRL].

Pages with additional information about a specific topic are cross-referenced within the text.
For example: ("See Installation Procedure on page 43".)

On screen menu items appear in bold. Example: "Click **Fujitsu Menu**, and select your choice".

THE INFORMATION ICON HIGHLIGHTS INFORMATION THAT WILL ENHANCE YOUR UNDERSTANDING OF THE SUBJECT MATERIAL.

THE CAUTION ICON HIGHLIGHTS INFORMATION THAT IS IMPORTANT TO THE SAFE OPERATION OF YOUR COMPUTER, OR TO THE INTEGRITY OF YOUR FILES. PLEASE READ ALL CAUTION INFORMATION CAREFULLY.

THE WARNING ICON HIGHLIGHTS INFORMATION THAT CAN BE HAZARDOUS TO EITHER YOU, YOUR LIFEBOOK NOTEBOOK, OR YOUR FILES. PLEASE READ ALL WARNING INFORMATION CAREFULLY.

Fujitsu Contact Information

Service and Support

You can contact Fujitsu Service and Support in the following ways:

- Toll free: 1-800-8Fujitsu (1-800-838-5487)
- E-mail: 8fujitsu@us.fujitsu.com
- Website: http://www.computers.us.fujitsu.com/support

Before you place the call, you should have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number

- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Type of device connected, if any

Fujitsu Shopping Online

You can go directly to the online by going to the website at: www.shopfujitsu.com.

YOU MUST HAVE AN ACTIVE INTERNET CONNECTION TO USE THE ONLINE URL LINKS.

Limited Warranty

Your LifeBook notebook is backed by a Fujitsu International Limited Warranty. Check the service kit that came with your notebook for the Limited Warranty period and terms and conditions.

Chapter 1

Getting to Know Your LifeBook

Overview

This section describes the components of your Fujitsu LifeBook V700 notebook. We strongly recommend that you read it before using your notebook – even if you are already familiar with notebook computers.

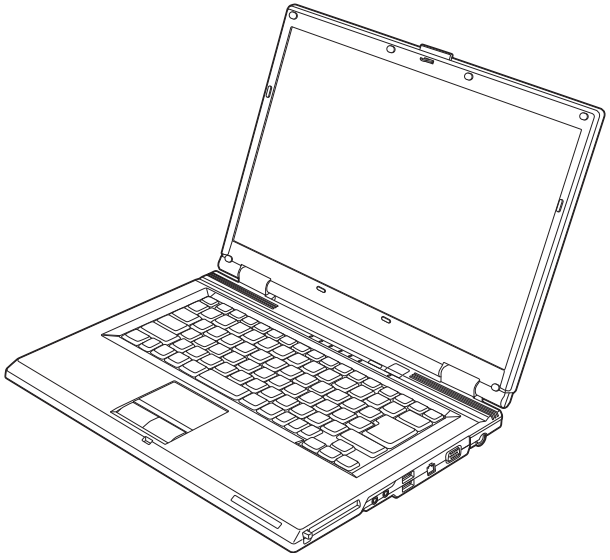


Figure 1. Fujitsu LifeBook V1020 notebook

Locating the Controls and Connectors

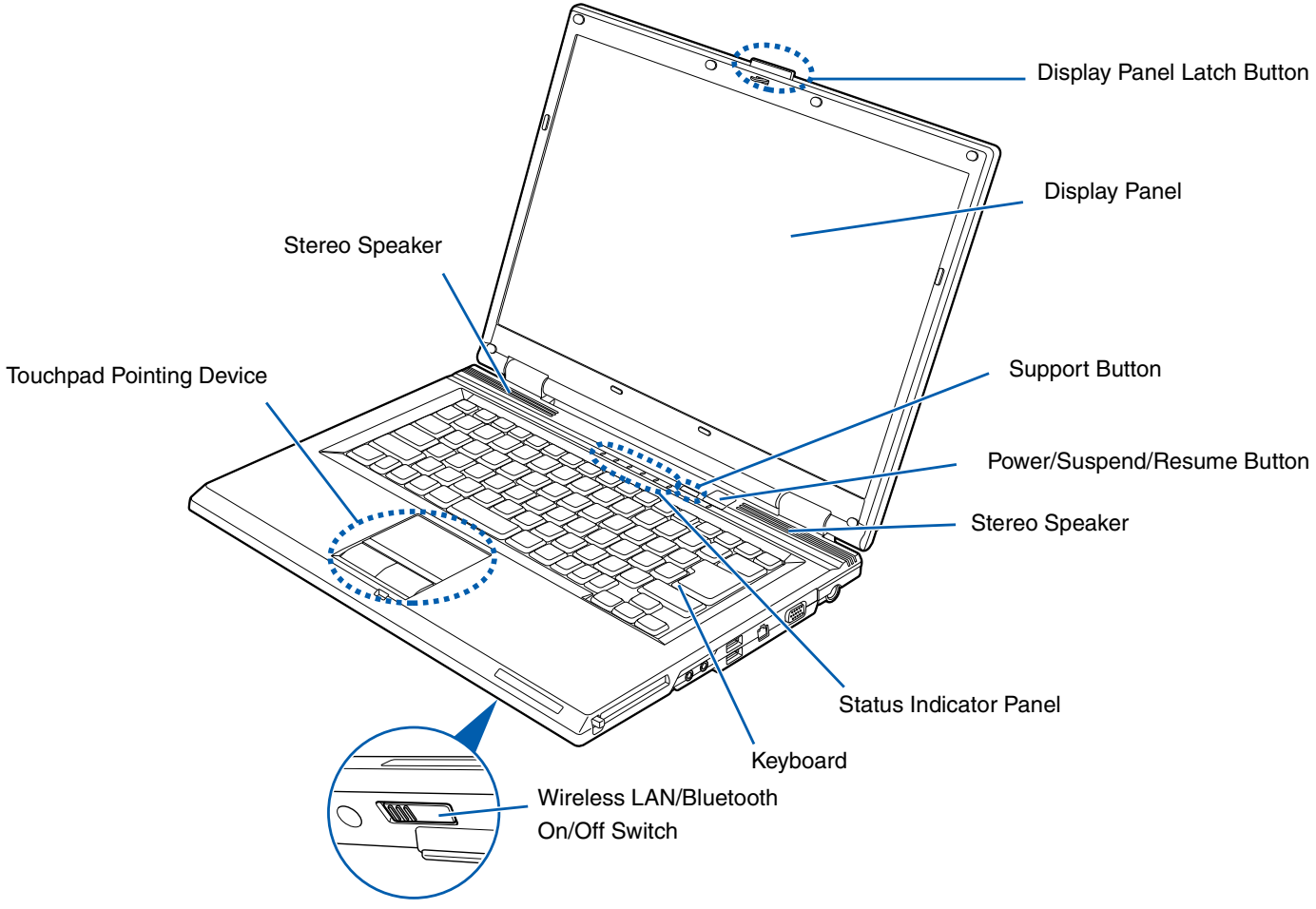


Figure 2. LifeBook notebook with display open

Top Components

The following is a brief description of your LifeBook notebook's top components.

Display Panel Latch Button

The display panel latch button is used to latch and unlatch the display. See "Opening the Display Panel" on page 37.

Display Panel

The display panel is a color LCD panel with back lighting for the display of text and graphics.

Support Button

The Support Button provides one-touch application launch capability. See "LifeBook Application Panel" on page 32.

Power/Suspend/Resume Button

The Power/Suspend/Resume button allows you to suspend notebook activity without powering off, resume your LifeBook notebook from suspend mode, power off your notebook, and power on your notebook when it has been shut down from Windows. See "Power/Suspend/Resume Button" on page 46.

Stereo Speakers

The built-in dual speakers allow for stereo sound.

Status Indicator Panel

The Status Indicator Panel displays symbols that correspond with a specific component of your LifeBook notebook. See "Status Indicator Panel" on page 21.

Keyboard

A full-size keyboard with dedicated Windows keys. See "Keyboard" on page 24.

Wireless LAN/Bluetooth On/Off Switch

The wireless LAN/Bluetooth on/off switch is used to turn on and off the optional WLAN and Bluetooth devices. Switching the device off when not in use will help to extend battery life. See “Activating the WLAN Device” on page 146.

Touchpad Pointing Device

The Touchpad pointing device is a mouse-like cursor control with a right button, a left button, and a cursor control pad. See “Touchpad Pointing Device” on page 27.

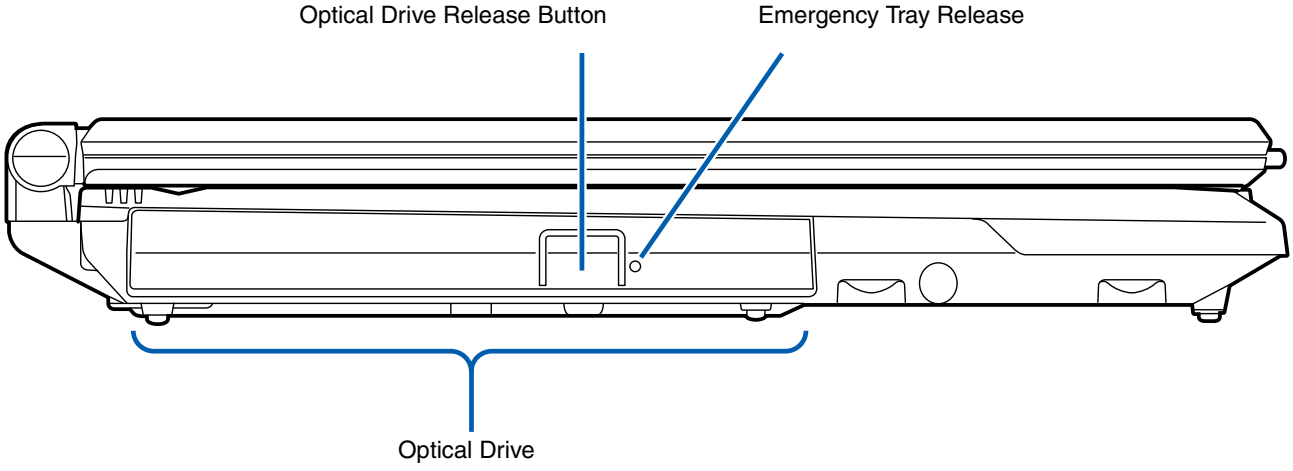


Figure 3. LifeBook notebook left-side panel

Left-Side Panel Components

The following is a brief description of your LifeBook notebook's left-side components.

Optical Drive

The optical drive bay contains a Modular Dual-Layer Multi-Format DVD Writer. See "Optical Drive" on page 56.

Optical Drive Release Button

The optical drive release button opens the optical drive.

Emergency Tray Release

The emergency tray release is used in the event you want to open the tray when power is not available. See "Emergency Optical Drive Tray Release" on page 59.

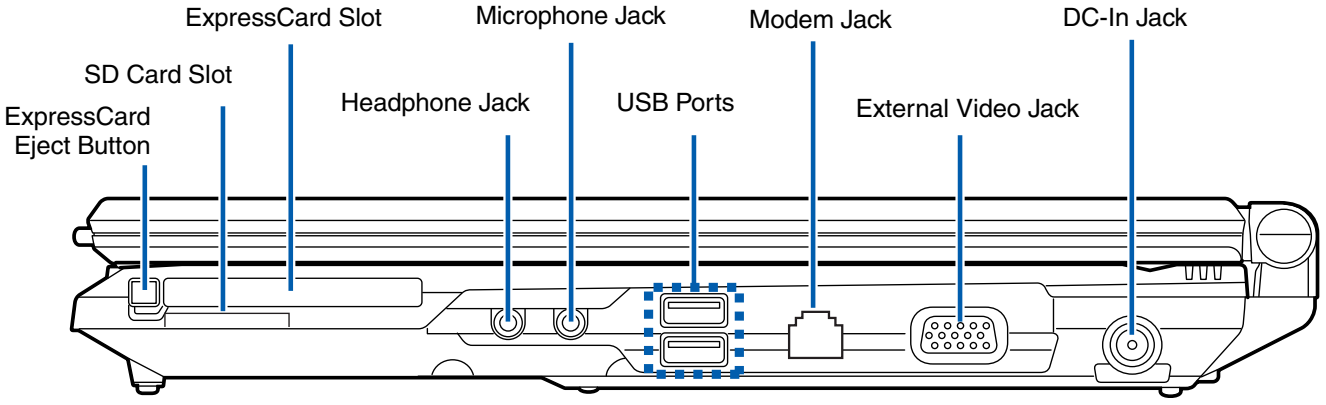


Figure 4. LifeBook notebook right-side panel

Right-Side Panel Components

The following is a brief description of your LifeBook notebook's right-side components.

ExpressCard Eject Button

The ExpressCard eject button is used for removing an ExpressCard from the slot.

SD Card Slot

The SD Card Slot allows you to install a Secure Digital (SD) Card. See "Secure Digital Cards" on page 66.

ExpressCard Slot

The ExpressCard Slot allows you to install an ExpressCard. See "Using ExpressCards" on page 63.

Headphone Jack

The headphone jack allows you to connect headphones.See "Headphone Jack" on page 74.

Microphone Jack

The microphone jack allows you to connect an external stereo microphone. See "Microphone Jack" on page 76.

USB 2.0 Ports

The USB 2.0 ports allow you to connect Universal Serial Bus devices. USB 2.0 transfers data at up to 480 Mbps and is backward-compatible with USB 1.1 devices, which transfer data at up to 12 Mbps. See “Universal Serial Bus Ports” on page 74.

Modem (RJ-11) Telephone Jack

The Modem (RJ-11) telephone jack is for attaching a telephone line to the internal multinational 56K modem. See “Modem (RJ-11) Telephone Jack” on page 72.

THE INTERNAL MODEM IS NOT INTENDED FOR USE WITH DIGITAL PBX SYSTEMS. DO NOT CONNECT THE INTERNAL MODEM TO A DIGITAL PBX AS IT MAY CAUSE SERIOUS DAMAGE TO THE INTERNAL MODEM OR YOUR ENTIRE NOTEBOOK. CONSULT YOUR PBX MANUFACTURER'S DOCUMENTATION FOR DETAILS. SOME HOTELS HAVE DIGITAL PBX SYSTEMS. BE SURE TO FIND OUT BEFORE YOU CONNECT YOUR MODEM.

THE INTERNAL MULTINATIONAL MODEM IS DESIGNED TO THE ITU-T V.90/V.92 STANDARD. ITS MAXIMUM SPEED OF 53000 BPS IS THE HIGHEST ALLOWED BY FCC, AND ITS ACTUAL CONNECTION RATE DEPENDS ON THE LINE CONDITIONS. THE MAXIMUM SPEED IS 33600 BPS AT UPLOAD, IN ACCORDANCE WITH FCC REGULATIONS. FOR ADDITIONAL INFORMATION ABOUT THE MODEM, REFER TO THE FUJITSU WEBSITE AT: US.FUJITSU.COM/COMPUTERS.

External Video Port

The external monitor port allows you to connect an external monitor or LCD projector. See “External Video Port” on page 76.

DC Power Jack

The DC power jack allows you to plug in the AC adapter to power your LifeBook notebook and charge the internal Lithium ion battery.

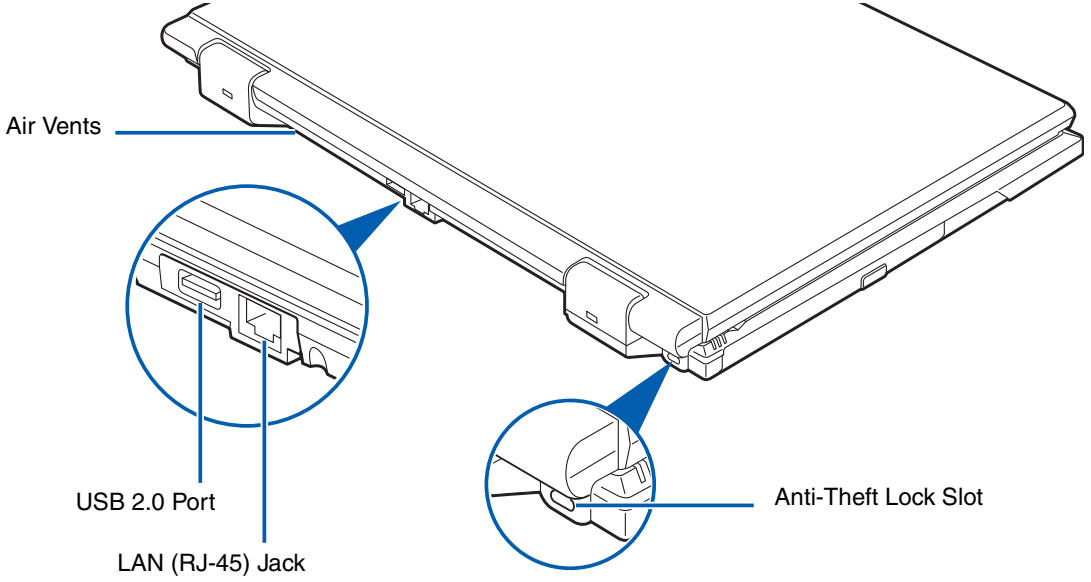


Figure 5. LifeBook notebook back panel

Back Panel Components

Following is a brief description of your LifeBook notebook's back panel components.

Air Vents

The air vents allow air to circulate through the system to cool down the components.

TO PROTECT YOUR NOTEBOOK FROM DAMAGE AND TO OPTIMIZE PERFORMANCE, BE SURE TO **KEEP ALL AIR VENTS UNOBSTRUCTED, CLEAN, AND CLEAR OF DEBRIS**. THIS MAY REQUIRE PERIODIC CLEANING, DEPENDING UPON THE ENVIRONMENT IN WHICH THE SYSTEM IS USED.

DO NOT OPERATE THE NOTEBOOK IN AREAS WHERE THE AIR VENTS CAN BE OBSTRUCTED, SUCH AS IN TIGHT ENCLOSURES OR ON SOFT SURFACES LIKE A BED OR CUSHION.

USB 2.0 Ports

The USB 2.0 ports allow you to connect Universal Serial Bus devices. USB 2.0 transfers data at up to 480Mbps and is backward-compatible with USB 1.1 devices, which transfer data at up to 12Mbps. See “Universal Serial Bus Ports” on page 74.

LAN (RJ-45) Jack

The internal LAN (RJ-45) jack is used for an internal 10Base-T/100Base-Tx Ethernet LAN connection. See “Internal LAN (RJ-45) Jack” on page 73.

Anti-theft Lock Slot

The anti-theft lock slot allows you to attach an optional physical lock down device.

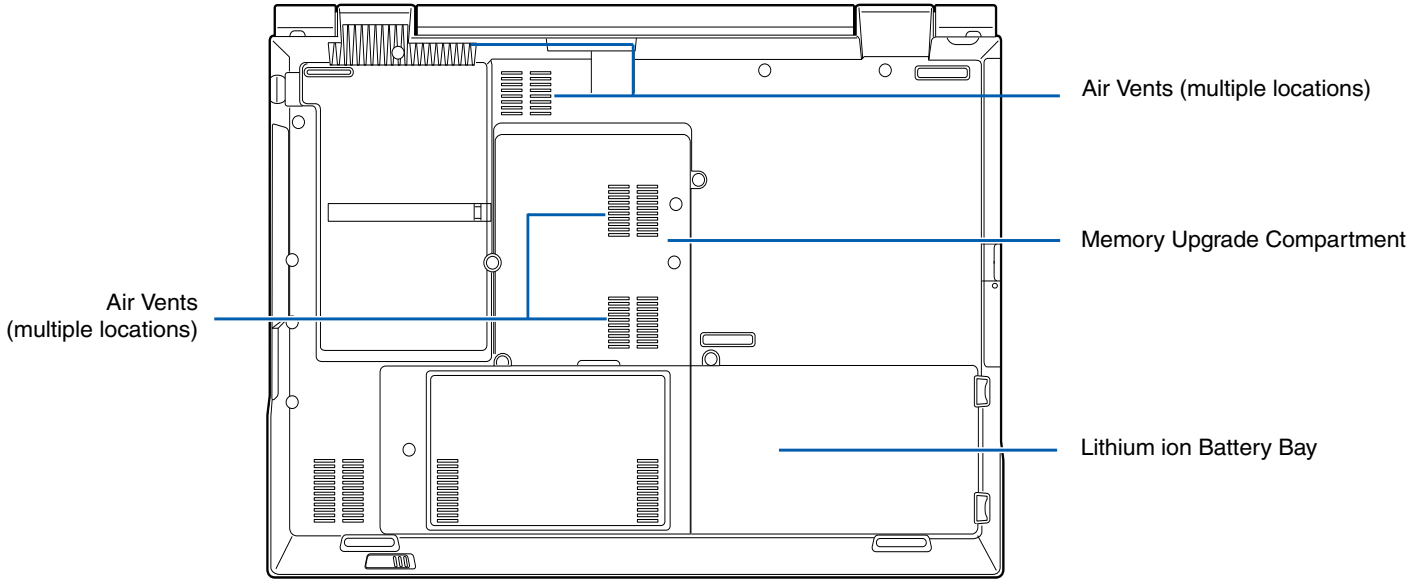


Figure 6. LifeBook notebook bottom panel

Bottom Components

The following is a brief description of your LifeBook notebook's bottom panel components.

Air Vents

The air vents allow air to circulate through the system to cool down the components.

TO PROTECT YOUR NOTEBOOK FROM DAMAGE AND TO OPTIMIZE SYSTEM PERFORMANCE, BE SURE TO **KEEP ALL AIR VENTS UNOBSTRUCTED, CLEAN, AND CLEAR OF DEBRIS**. THIS MAY REQUIRE PERIODIC CLEANING, DEPENDING UPON THE ENVIRONMENT IN WHICH THE SYSTEM IS USED.

DO NOT OPERATE THE NOTEBOOK IN AREAS WHERE THE AIR VENTS CAN BE OBSTRUCTED, SUCH AS IN TIGHT ENCLOSURES OR ON SOFT SURFACES LIKE A BED OR CUSHION.

Memory Upgrade Compartment

Your notebook comes with high speed Double Data Rate 2 Synchronous Dynamic RAM (DDR2 SDRAM). The memory upgrade compartment allows you to expand the system memory capacity of your notebook, thus improving overall performance. See “Memory Upgrade Module” on page 68. Under normal circumstances, it should not be necessary to open this compartment.

Lithium ion Battery Bay

The battery bay contains the internal Lithium ion battery. It can be opened for the removal of the battery when stored over a long period of time or for swapping a discharged battery with a charged Lithium ion battery. See “Lithium ion Battery” on page 51.

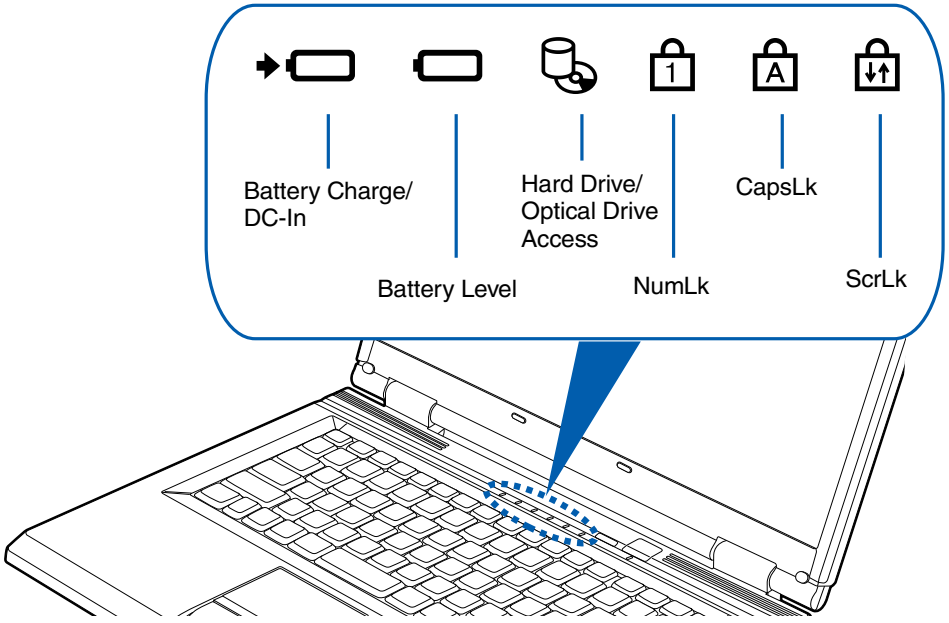


Figure 7. Status Indicator Panel

Status Indicator Panel

The Status Indicators display symbols that correspond to specific components of your Fujitsu LifeBook notebook. The LEDs below each symbol tell you how each of those components is operating.

Battery Charge/DC-In Indicator

- **Orange, solid:** AC adapter and battery are available and system is charging.
- **Green, solid:** AC adapter and battery are available and system is fully charged, or AC adapter is plugged in but battery is not installed.

- **Orange, blinking:** AC adapter and battery are available and waiting to charge battery (battery is out of thermal range).
- **Off:** AC adapter is not plugged in.

Battery Level Indicator

The Battery Level indicators display the charge level of the indicated battery pack, as follows:

- **Green, solid:** Battery is between 51% and 100% charged.
- **Orange, solid:** Battery is between 13% and 50% charged.
- **Red, solid:** Battery is 12% or less charged.
- **Orange, blinking:** Blinks during battery status measurement (Four seconds after the battery is installed).
- **Red, blinking:** There is a problem with the battery.
- **Off**: There is no battery installed or the battery has no charge.

- If the battery pack is installed while the power is turned off, the battery level indicator will display the charge level for five seconds after it blinks orange.
- If the AC adapter is not connected or the battery pack is not fully charged when the computer is switched to standby mode, the indicator will blink. The LED blinks at the rate of one second on/six seconds off.

- Batteries subjected to shocks, vibration or extreme temperatures can be permanently damaged.
- A shorted battery is damaged and must be replaced.

Hard Drive/Optical Drive Access Indicator

The Hard Drive/Optical Drive Access indicator glows green when your internal hard drive is being accessed. Note that flickering is normal.

NumLk Indicator

The NumLk indicator states that the integral keyboard is set in ten-key numeric keypad mode.

CapsLock Indicator

The CapsLock indicator states that your keyboard is set to type in all capital letters.

ScrLk Indicator

The ScrLk indicator states that your scroll lock is active.

Keyboard

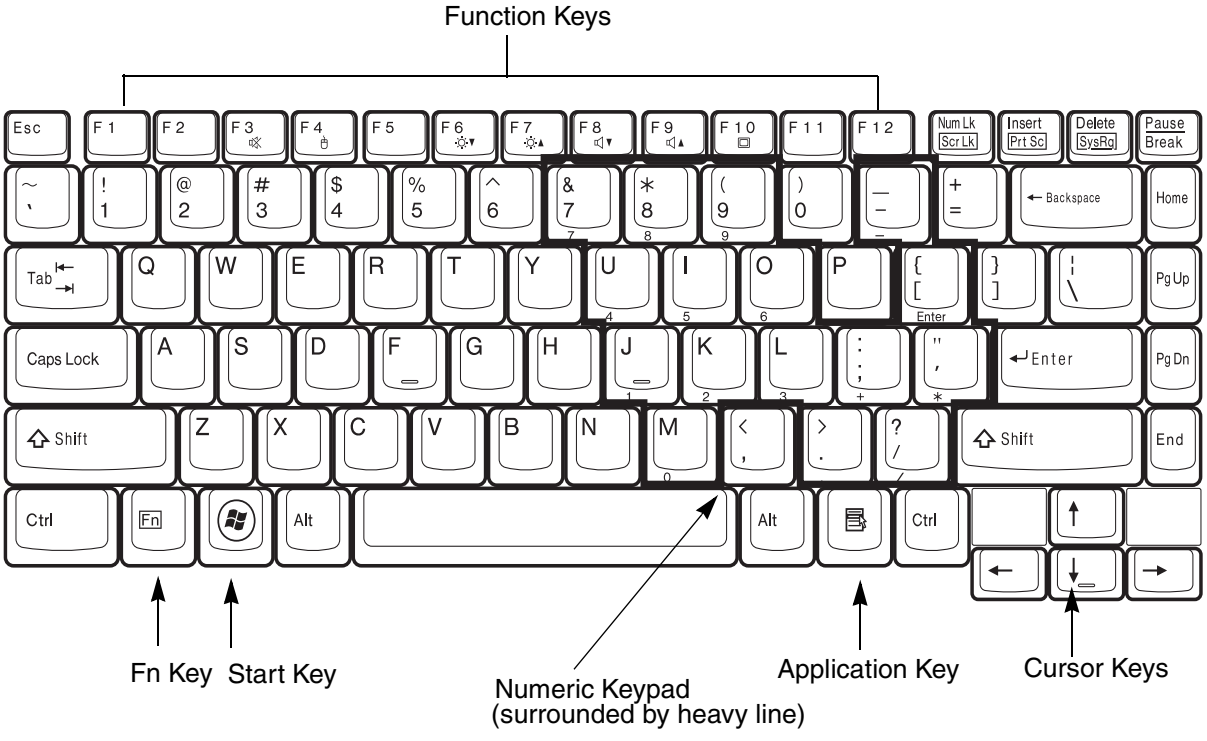


Figure 8. Keyboard

Using the Keyboard

Your Fujitsu LifeBook notebook has an integral 86-key keyboard. The keys perform all the standard functions of a 101-key keyboard, including the Windows keys and other special function keys. This section describes the following keys.

- **Numeric keypad:** Your notebook allows certain keys to serve dual purposes, both as standard characters and as numeric and mathematical keys. The ability to toggle between the standard character and numerical keys is controlled through the [NumLk] key.
- **Cursor keys:** Your keyboard contains four arrow keys for moving the cursor or insertion point to the right, left, up, or down within windows, applications and documents.
- **Function keys:** The keys labeled [F1] through [F12], are used in conjunction with the [Fn] key to produce special actions that vary depending on what program is running.
- **Windows keys:** These keys work with your Windows operating system and function the same as the onscreen Start menu button, or the right button on your pointing device.

Numeric Keypad

Certain keys on the keyboard perform dual functions as both standard character keys and numeric keypad keys. NumLk can be activated by pressing the [NumLk] keys. Turning off the NumLk feature is done the same way. Once this feature is activated you can enter numerals 0 through 9, perform addition (+), subtraction (-), multiplication (*), or division (/), and enter decimal points (.) using the keys designated as ten-key function keys. The keys in the numeric keypad are marked on the front edge of the key to indicate their secondary functions.

Windows Keys

Your LifeBook notebook has two Windows keys, consisting of a Start key and an Application key. The Start key displays the Start menu. This button functions the same as your onscreen Start menu button. The Application key functions the same as your right mouse button and displays shortcut menus for the selected item. (Please refer to your Windows documentation for additional information regarding the Windows keys.)

Cursor Keys

The cursor keys are the four arrow keys on the keyboard which allow you to move the cursor up, down, left and right in applications. In programs such as Windows Explorer, it moves the “focus” (selects the next item up, down, left, or right).

Function Keys

Your LifeBook notebook has 12 function keys, F1 through F12. The functions assigned to these keys differ for each application. You should refer to your software documentation to find out how these keys are used.

- The [Fn] key provides extended functions for the notebook and is always used in conjunction with another key.
- [Fn+F3]: Pressing [F3] while holding [Fn] will toggle the Audio Mute on and off.
- [Fn+F4]: Pressing [F4] while holding [Fn] will toggle the Touchpad on and off. Note that the [Fn+F4] combination only works if Manual Setting is selected in the BIOS. (See “BIOS Setup Utility” on page 42)
- [Fn+F6]: Pressing [F6] repeatedly while holding [Fn] will lower the brightness of your display.
- [Fn+F7]: Pressing [F7] repeatedly while holding [Fn] will increase the brightness of the display.
- [Fn+F8]: Pressing [F8] repeatedly while holding [Fn] will decrease the volume of your LifeBook notebook.
- [Fn+F9]: Pressing [F9] repeatedly while holding [Fn] will increase the volume of your LifeBook notebook.
- [Fn+F10]: Pressing [F10] while holding [Fn] allows you to change your selection of where to send your display video. Each time you press the combination of keys you will step to the next choice. The choices, in order, are: built-in display panel only, external monitor only, and both built-in display panel and external monitor.

Touchpad Pointing Device

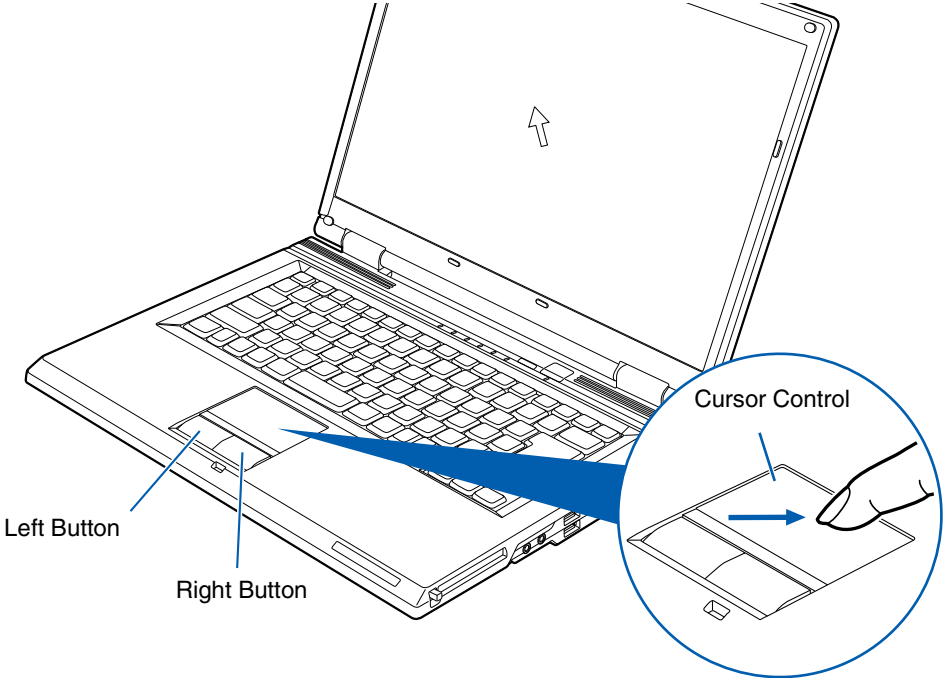


Figure 9. Touchpad pointing device

The Touchpad pointing device comes built into your Fujitsu LifeBook notebook. It is used to control the movement of the pointer to select items on your display panel. The Touchpad is composed of a cursor control, a left button and a right button. The cursor control works the same way a mouse does, and moves the cursor around the display. It only requires light pressure with the tip of your finger. The left and right buttons function the same as mouse buttons. The actual functionality of the buttons may vary depending on the application that is being used.

AN EXTERNAL MOUSE CAN BE CONNECTED TO THE USB PORTS ON YOUR LIFEBOOK NOTEBOOK AND USED SIMULTANEOUSLY WITH THE TOUCHPAD. HOWEVER, IF YOU BOOT THE SYSTEM WITH AN EXTERNAL MOUSE CONNECTED THE TOUCHPAD WILL BE DISABLED OR ENABLED DEPENDING ON THE SPECIFICATIONS IN YOUR BIOS SETTINGS. *See "BIOS Setup Utility" on page 42.*

Clicking

Clicking means pushing and releasing a button. To left-click, move the cursor to the item you wish to select, press the left button once, and then immediately release it. To right-click, move the mouse cursor to the item you wish to select, press the right button once, and then immediately release it. You also have the option to perform the clicking operation by tapping lightly on the Touchpad once.

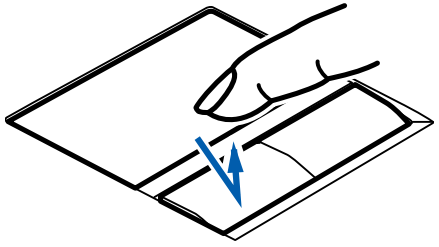


Figure 10. Clicking with button

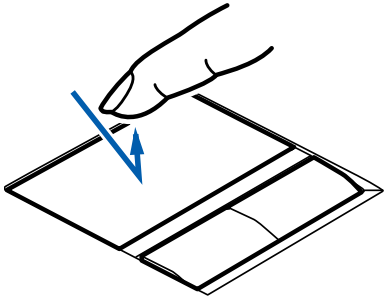


Figure 11. Clicking with Touchpad

Double-Clicking

Double-clicking means pushing and releasing the left button twice in rapid succession. This procedure does not function with the right button. To double-click, move the cursor to the item you wish to select, press the left button twice, and immediately release it. You can also perform the double-click operation by tapping lightly on the Touchpad twice.

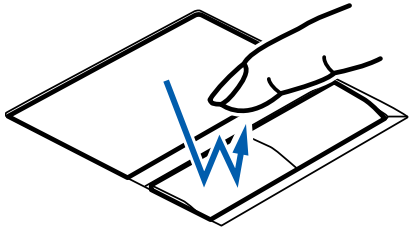


Figure 12. Double-clicking with button

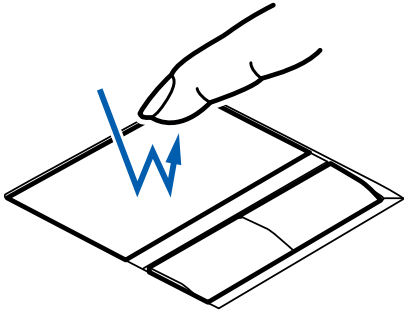


Figure 13. Double-clicking with Touchpad

Dragging

Dragging means pressing and holding the left button, while moving the cursor. To drag, move the cursor to the item you wish to move. Press and hold the left button while moving the item to its new location and then release it. Dragging can also be done using the Touchpad. First, tap the Touchpad twice over the item you wish to move making sure to leave your finger on the pad after the final tap. Next, move the object to its new location by moving your finger across the Touchpad, and then release your finger.

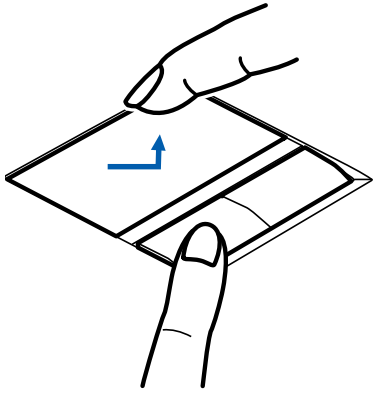


Figure 14. Dragging with button

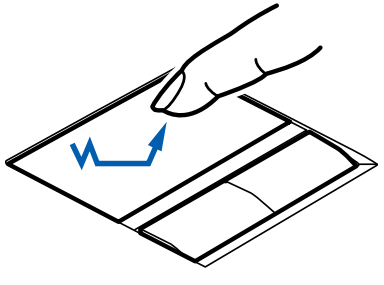


Figure 15. Dragging with Touchpad

Touchpad Control Adjustment

The Windows Control Panel allows you to customize your Touchpad with selections made from within the Mouse Properties dialog box.

Volume Control

Your Fujitsu LifeBook notebook has multiple volume controls which interact with each other.

ANY SOFTWARE THAT CONTAINS AUDIO FILES WILL ALSO CONTAIN A VOLUME CONTROL OF ITS OWN. IF YOU INSTALL AN EXTERNAL AUDIO DEVICE THAT HAS AN INDEPENDENT VOLUME CONTROL, THE HARDWARE VOLUME CONTROL AND THE SOFTWARE VOLUME CONTROL WILL INTERACT WITH EACH OTHER. IT SHOULD BE NOTED THAT IF YOU SET YOUR SOFTWARE VOLUME TO OFF, YOU WILL OVERRIDE THE EXTERNAL VOLUME CONTROL SETTING.

Controlling the Volume

The volume can be controlled in several different ways:

- Volume can be changed or muted from within the Volume Control in the system tray.
- Volume can be controlled with the F8 and F9 functions keys. Pressing [F8] repeatedly while holding [Fn] will decrease the volume of your notebook. Pressing [F9] repeatedly while holding [Fn] will increase the volume of your notebook.
- Volume can be muted by pressing the [F3] key while holding down the [Fn] key. To restore audio, repeat the [Fn+F3] procedure.
- Volume can be controlled by many volume controls that are set within individual applications.
- Certain external audio devices you might connect to your system may have hardware volume controls.

Each source discussed above puts an upper limit on the volume level that must then be followed by the other sources.

We recommend that you experiment with the various volume controls to discover the optimal sound level.

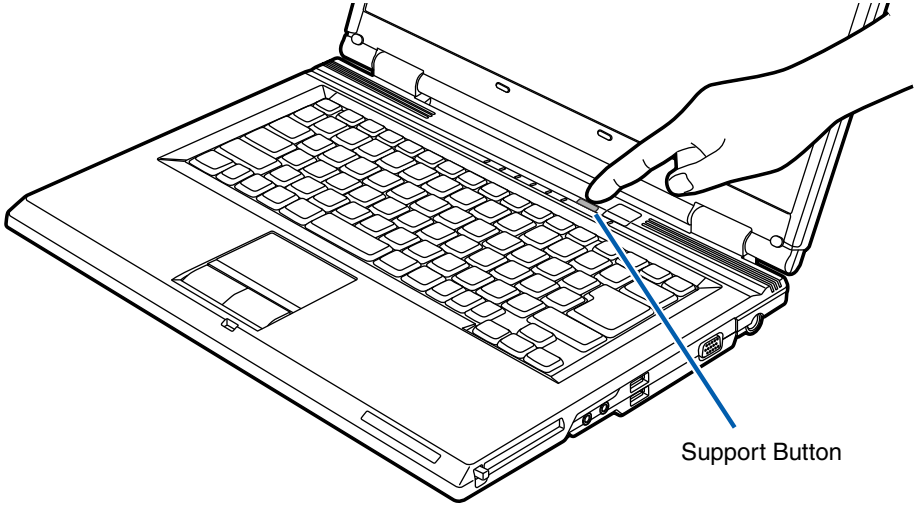


Figure 16. LifeBook Application Panel

LifeBook Application Panel

The application panel consists of a Support button that allows you to either launch the Fujitsu Support Center utility or to launch a user-defined application with the touch of a button when your system is on.

Opening the Fujitsu Support Center with the Support Button

The Support button performs different actions when the system is off or when it is on.

When the system is off, pressing the Support button will open the Fujitsu Start Boot Menu which allows you to select either Diagnostic Program to test your system or Recovery and Utility to perform a number of other functions, including recovery of your system.

When the system is on, pressing the Support button invokes the Fujitsu Support Center utility which offers three tabs: Manual, Diagnostic Program, and Support.

Manual tab

The Manual tab lets you automatically go to the Fujitsu Support website to download the system User's Guide. (You must be connected to the Internet in order to use this function).

Diagnostic Program tab

The Diagnostic Program tab allows you to automatically reboot the system, then open the boot menu, from which you can choose Diagnostic Program or Recovery and Utility (same as pressing the button when the system is shut down). From the Diagnostic tab you can also view your System Information.

Support tab

The Support tab lets you automatically go to the Support Website. (You must be connected to the Internet in order to access the Support website).

Launching Applications with the Support Button

Your notebook is pre-installed with software utilities that let you operate and configure your LifeBook Application Panel. These utilities are found in the Start menu, under Settings > Control Panel > Application Panel (or "Buttons" in some configurations). The utility includes an Application Panel Setup tab.

Configuring your LifeBook Application Panel

When you start Windows, the LifeBook Application Panel is automatically activated. As an application launcher, the LifeBook Application Panel is very flexible. To set up the Panel to best suit your needs, we have provided the Application Panel Setup utility that quickly and easily helps you make the most of this valuable feature.

To configure your LifeBook Application Panel with Application Panel Setup:

1. Click on [Start] -> Programs -> LifeBook Application Panel.
2. Click on Application Panel Setup. The Application Panel Setup utility will appear. There is a tab that corresponds to the Support button. When you receive your notebook, this button is pre-configured to launch the Fujitsu Support Center. See “Opening the Fujitsu Support Center with the Support Button” on page 32. To reconfigure it to launch another program proceed to the following steps.
1. Click on [Application Registration].
2. Click the “Select from Start Menu” box.
3. Scroll down the list of applications, and then click on the application you wish to launch with this button.
4. Click [Next], [Finish], [OK]. The button will now launch the new application.
5. If you want to return to launching the Fujitsu Support Center utility with this button, you need only click on Fujitsu Support Center from the dropdown list. Be aware that you will erase the settings for the “other application”. If you wish to go back to launching the “other application” from this button, you will need to reconfigure it as described above.
6. When you have finished with Application Panel Setup click OK, and the new settings will take effect. You can reconfigure your LifeBook Application Panel as often as you like.

Chapter 2

Getting Started with Your LifeBook

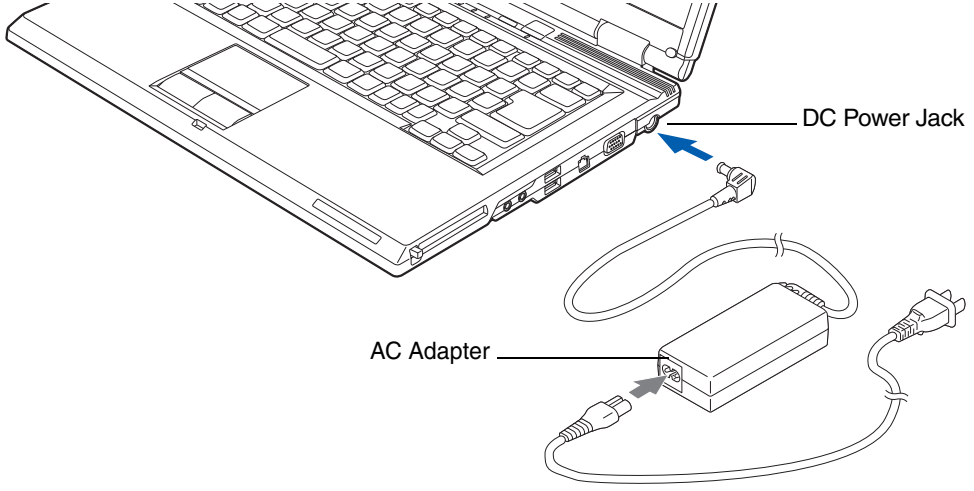


Figure 17. Connecting the AC Adapter

Power Sources

Your Fujitsu LifeBook notebook has three possible power sources: a primary Lithium ion battery, an AC adapter or an optional Auto/Airline adapter.

Connecting the Power Adapters

The AC adapter or optional Auto/Airline adapter provides power for operating your notebook and charging the batteries.

Connecting the AC Adapter

1 Plug the DC output cable into the DC power jack of your LifeBook notebook.

2 Plug the AC adapter into an AC electrical outlet.

Connecting the Optional Auto/Airline Adapter

1 Plug the DC output cable into the DC power jack on your notebook.

2 Plug the Auto/Airline adapter into the cigarette lighter of an automobile with the ignition key in the On or Access,

OR,

3 Plug the Auto/Airline adapter into the DC power jack on an airplane seat.

Switching from AC Adapter Power or the Auto/Airline Adapter to Battery Power

1 Be sure that you have at least one charged battery installed.

2 Remove the AC adapter or the Auto/Airline adapter.

THE LITHIUM ION BATTERY IS NOT CHARGED UPON PURCHASE. INITIALLY, YOU WILL NEED TO CONNECT EITHER THE AC ADAPTER OR THE AUTO/AIRLINE ADAPTER TO USE YOUR NOTEBOOK.

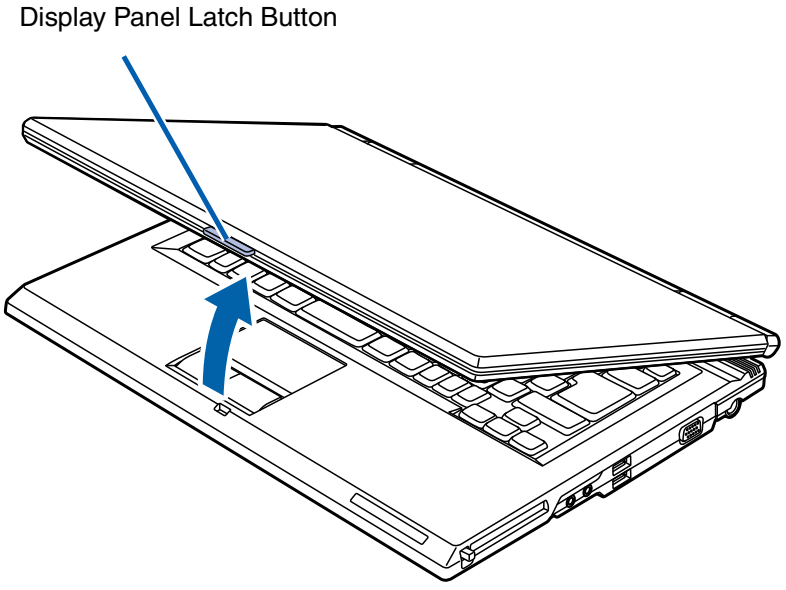


Figure 18. Opening the Display Panel

Display Panel

Your Fujitsu LifeBook notebook contains a display panel that is backlit for easier viewing in bright environments and maintains top resolution through the use of active-matrix technology.

Opening the Display Panel

1. Press the Display Panel latch button in. This releases the locking mechanism, allowing you to raise the display.
2. Lift the display backwards, being careful not to touch the screen, until it is at a comfortable viewing angle.

Adjusting Display Panel Brightness

Once you have turned on your LifeBook notebook, you may want to adjust the brightness level of the screen to a more comfortable viewing level. There are three ways to adjust the brightness, by using the keyboard, the Power Options, or the Windows Mobility Center.

NOTE THAT THE CHANGED SETTINGS ARE TEMPORARY BY DEFAULT, BUT THEY CAN BE MADE PERMANENT BY USING THE POWER OPTIONS UTILITY IN THE CONTROL PANEL.

Using the Keyboard

- [Fn+F6]: Pressing repeatedly will lower the brightness of your display.
- [Fn+F7]: Pressing repeatedly will increase the brightness of the display.

Using the Power Options

To change the brightness using the Power Options utility, open the Control Panel and double-click on the Power Options icon. Select “Adjust the display brightness” in the left panel, then drag the brightness bars to the desired level. Note that the settings you make via this utility become permanent until you decide to change them again.

Using the Windows Mobility Center

In the Control Panel, double-click the Windows Mobility Center icon. Drag the Display Brightness bar to the desired level.

- When using AC power your brightness setting is set to its highest level by default. When using battery power your brightness setting is set to approximately mid-level by default.
- The higher the brightness level, the more power the notebook will consume and the faster your batteries will discharge. For maximum battery life, make sure that the brightness is set as low as possible.

Closing the Display Panel

1. Holding the edge of your display panel, pull it forward until it is flush with the body of your LifeBook notebook.
2. Push down until you hear a click. This will engage the locking mechanism and prevent your display panel from opening unexpectedly.

Starting Your LifeBook Notebook

Power On

Power/Suspend/Resume Button

The Power/Suspend/Resume button is used to turn on your LifeBook notebook from its off state. Once you have connected your AC adapter or charged the internal Lithium ion battery, you can power on your LifeBook notebook.

WHEN YOU TURN ON YOUR LIFEBOOK NOTEBOOK, BE SURE YOU HAVE A POWER SOURCE. THIS MEANS THAT A BATTERY IS INSTALLED AND CHARGED, OR THAT THE AC OR AUTO/AIRLINE ADAPTER IS CONNECTED AND HAS POWER.

To turn on your LifeBook notebook from its off state, press the Power/Suspend/Resume button, located above the keyboard to the right. When you are done working you can either leave your notebook in Suspend mode (see “Standby (Sleep) Mode” on page 46), or you can turn it off (see “Powering Off” on page 49).

DO NOT CARRY YOUR LIFEBOOK NOTEBOOK AROUND WITH THE POWER ON OR SUBJECT IT TO SHOCKS OR VIBRATION, AS YOU RISK DAMAGING YOUR NOTEBOOK.

When you power on your LifeBook, it will perform a Power On Self Test (POST) to check the internal parts and configuration for correct functionality. If a fault is found, your LifeBook notebook will emit an audio warning and/or an error message will be displayed. See “Power On Self Test Messages” on page 90. Depending on the nature of the problem, you may be able to continue by starting the operating system or by entering the BIOS setup utility and revising the settings.

After satisfactory completion of the POST, your notebook will load your operating system.

NEVER TURN OFF YOUR LIFEBOOK NOTEBOOK DURING THE POWER ON SELF TEST (POST) OR IT WILL CAUSE AN ERROR MESSAGE TO BE DISPLAYED WHEN YOU TURN YOUR LIFEBOOK NOTEBOOK ON THE NEXT TIME. *See "Power On Self Test Messages" on page 90.*

Boot Sequence

The procedure for starting-up your notebook is termed the Bootup sequence and involves your notebook's BIOS. When your LifeBook notebook is first turned on, the main system memory is empty, and it needs to find instructions to start up your notebook. This information is in the BIOS program. Each time you power up or restart your notebook, it goes through a boot sequence which displays a Fujitsu logo until your operating system is foun. During booting, your notebook is performing a standard boot sequence including a Power On Self Test (POST). When the boot sequence is completed without a failure and without a request for the BIOS Setup Utility, the system displays the operating system's opening screen.

The boot sequence is executed when:

- You turn on the power to your LifeBook notebook.
- You restart your notebook from the Windows Shut Down dialog box.
- The software initiates a system restart. Example: When you install a new application.

Hard Disk Drive Passwords

To provide additional security for your data, you can assign passwords to your hard disk drive(s). This feature is managed in the system BIOS Setup Utility. See *BIOS Setup Utility* below for information about accessing the utility.

REMEMBER YOUR PASSWORDS. IF YOU SET AND FORGET YOUR USER AND MASTER HARD DISK PASSWORDS, FUJITSU COMPUTER SYSTEMS WILL NOT BE ABLE TO RESET IT. YOU MAY LOSE DATA AND HAVE TO REPLACE YOUR SYSTEM BOARD OR HARD DISK DRIVE.

BIOS Setup Utility

The BIOS Setup Utility is a program that sets up the operating environment for your LifeBook notebook. Your BIOS is set at the factory for normal operating conditions, therefore there is no need to set or change the BIOS' environment to operate your notebook.

The BIOS Setup Utility configures:

- Device control feature parameters, such as changing I/O addresses and boot devices.
- System Data Security feature parameters, such as passwords.

Entering the BIOS Setup Utility

To enter the BIOS Setup Utility do the following (or use the TrustedCore Menu, as detailed below):

1. Turn on or restart your LifeBook notebook.
2. To enter the BIOS Setup Utility, press the [F2] key once the Fujitsu logo appears on the screen. This will open the main menu of the BIOS Setup Utility with the current settings displayed.
3. Press the [RIGHT ARROW] or [LEFT ARROW] key to scroll through the other setup menus to review or alter the current settings.

Using the TrustedCore Menu

When the Fujitsu logo appears on the screen. press the [Enter] key or click on the left mouse or touchpad button; the TrustedCore Menu will appear.

The TrustedCore Menu provides shortcuts to the following menus and information screens:

- BIOS Setup
- Diagnostic Screen
- Boot Menu
- Patent Information
- System Information
- Continue Booting

Clicking on any of the fields will invoke the screen, information, or action described.

The Boot Menu can also be invoked by pressing the [F12] key when the Fujitsu logo appears on the screen.

BIOS Guide

A guide to your notebook's BIOS is available online. Please visit our service and support website at **http://www.computers.us.fujitsu.com/support**, then select User's Guides under Online Support. Select your Product, Series, and Model, then click [Go]. Under the Manuals tab, select the BIOS Guide.

Booting the System

We strongly recommend that you not attach any external devices and do not put a DVD/CD in your drive until you have gone through the initial power on sequence.

When you turn on your notebook for the first time, it will display a Fujitsu logo on the screen. If you do nothing the system will load the operating system, and then the Windows Welcome will begin.

Starting Windows Vista the First Time

- **THE FIRST TIME YOU INITIALIZE YOUR WINDOWS VISTA SYSTEM, THE SCREEN WILL BE BLANK FOR APPROXIMATELY TWO MINUTES.** THIS IS NORMAL. AFTER INITIALIZATION, A "SET UP WINDOWS" DIALOG BOX WILL APPEAR.
  IMPORTANT: DURING THE SETUP PROCEDURE, DO NOT DISCONNECT THE POWER SUPPLY, PRESS ANY BUTTONS, OR USE ANY PERIPHERAL DEVICES SUCH AS A MOUSE, KEYBOARD, OR REMOTE CONTROL.
- THE FIRST TIME YOU INITIALIZE YOUR WINDOWS VISTA SYSTEM, YOU WILL BE ASKED TO SELECT YOUR LANGUAGE. **BE SURE TO SELECT THE CORRECT LANGUAGE THE FIRST TIME**, OTHERWISE IT WILL BE NECESSARY TO RESTORE YOUR SYSTEM USING THE RESTORE MEDIA.

In order to ensure that you receive the most benefits from the Windows Vista operating system, it should be registered the first time you use it.

1 First of all, you will need to read and accept the End User License Agreements (EULAs).

- If you reject the terms of the license agreements you will be asked to review the license agreements for information on returning Windows or to shut down your LifeBook notebook.
- You cannot use your notebook until you have accepted the License Agreements. If you stop the process your notebook will return to the beginning of the Windows Welcome Process, even if you shut your notebook down and start it up again.

2 You will be prompted to enter your User Name and Password and you will be given a chance to select an icon for your account.

3 The next screen asks for a Computer Name and allows you to choose a desktop background.

4 You will next see a “Help protect Windows automatically” screen in which the default choice is “Use recommended settings”. The other two choices are “Install important updates only” and “Ask me later”. Select from the three choices.

5 On the next screen set your time and date settings.

6 You will next see the “Select your computer's current location” screen. Make your selection from Home, Work (Default), and Public location.

7 The “Thank you” screen follows and an offer for free Norton Internet Security is extended. Following are several screens while Windows checks the system performance.

8 Windows will then boot up for the first time. As noted above, the first time you initialize your Windows Vista system, the screen will be blank for approximately two minutes. This is normal. During this period, do not disconnect the power supply, press any buttons, or use any peripheral devices such as mouse, keyboard, or remote control.

Registering Windows Vista with Microsoft

1 After Windows has booted up for the first time, the Control Panel Welcome Center will appear. If the Register Windows Online icon is not seen in the window, click on “Show all xx items” (where “xx” is the number of topics in the Welcome Center).

2 Click on Register Windows Online and follow the instructions that appear to register your copy of Windows.

Registering Your LifeBook notebook with Fujitsu

You can register your LifeBook by going to our website at: **us.fujitsu.com/computers**

You will need to be set up with an Internet Service Provider (ISP) to register online.

Installing Click Me!

BEFORE INSTALLING THE CLICKME! UTILITY, BE SURE THE WIRELESS LAN SWITCH IS TURNED ON.

The first time you boot up your system, you will see a “Primary Settings for the PC” window. This window explains the installations which will be performed by the Click Me! utility. If you click [Execute], Click Me! will begin installing. If after clicking the button you receive a “User Account Control” window, you will be asked for your permission to continue. Click [Continue] to continue. If you cancel the operation, the Click Me! icon will appear on your desktop for later installation.

THERE MAY BE ADDITIONAL THIRD-PARTY APPLICATIONS THAT ARE NOT INSTALLED BY THE CLICKME! UTILITY. FOR MORE INFORMATION, REFER TO YOUR GETTING STARTED GUIDE.

Fujitsu Driver Update Utility

Your system has a convenient tool called the Fujitsu Driver Update (FDU) utility. With FDU, you can choose to automatically or manually go to the Fujitsu site to check for new updates for your system. For more information about the FDU utility, refer to “Automatically Downloading Driver Updates” on page 100.

Power Management

Your Fujitsu LifeBook notebook has many options and features for conserving battery power. Some of these features are automatic and need no user intervention, such as those for the internal modem. However, others depend on the parameters you set to best suit your operating conditions, such as those for the display brightness. Internal power management for your notebook may be controlled from settings made in your operating system, pre-bundled power management application, or from settings made in BIOS setup utility.

Besides the options available for conserving battery power, there are also some things that you can do to prevent your battery from running down as quickly. For example, you can create an appropriate power saving profile, put your notebook into Standby (Sleep) mode when it is not performing an operation, and you can limit the use of high power devices. As with all mobile, battery powered computers, there is a trade-off between performance and power savings.

Power/Suspend/Resume Button

When your notebook is active, the Power/Suspend/Resume button can be used to manually put the notebook into Standby (Sleep) mode. Push the Power/Suspend/Resume button when the notebook is active, but not actively accessing anything, and immediately release the button.

If your notebook is suspended, pushing the Power/Suspend/Resume button returns your notebook to active operation. You can tell whether the system is Suspended by looking at the Power indicator. If the indicator is visible and not flashing, your notebook is fully operational. If the indicator is visible *and* flashing, your notebook is in Standby mode. If the indicator is not visible, the power is off or your notebook is in Hibernation mode. *(See Hibernation Feature)*

Standby (Sleep) Mode

Standby (Sleep) mode in Windows saves the contents of your system memory during periods of inactivity by maintaining power to critical parts. This mode turns off the CPU, display, hard drive, and all other internal components except those necessary to maintain system memory and for restarting.

Your notebook can be put in Standby mode by:

- Pressing the Power/Suspend/Resume button when your system is turned on.
- Selecting Sleep from the Windows Shut Down menu.
- Timing out from lack of activity.
- Allowing the battery to reach the Dead Battery Warning condition.

System memory typically stores the files on which you are working, open application information, and any other data required to support operations in progress. When you resume operation from Standby, your system will return to where it left off. You must use the Power/Suspend/Resume button to resume operation, and there must be an adequate power source available, or your notebook will not resume.

- If running your notebook on battery power, be aware that the battery continues to discharge while your notebook is in Standby mode, though not as fast as when fully operational.
- Disabling the Power/Suspend/Resume button prevents it from being used to put the notebook into Standby or Hibernation (Save-to-Disk) mode. The button resume function can't be disabled.
- The Standby or Hibernation (Save-to-Disk) mode should not be used with certain PC Cards. Check your PC Card documentation for more information. When PC Cards or external devices are in use, Hibernation (Save-to-Disk) mode cannot return to the exact state prior to suspension, because all of the peripheral devices will be re-initialized when the system restarts.
- If your notebook is actively accessing information when you enter the Standby or Hibernation mode, changes to open files are not lost. The files are left open and memory is kept active during Standby mode or the memory is transferred to the internal hard drive during Hibernation mode.

  The main advantage of using Hibernation (Save-to-Disk) is that power is not required to maintain your data. This is particularly important if you will be leaving your notebook in a suspended state for a prolonged period of time. The drawback of using Hibernation mode is that it lengthens the power down and power up sequences and resets peripheral devices.

Hibernation (Save-to-Disk) Feature

The Hibernation feature saves the contents of your notebook's system memory to the hard drive as a part of the Suspend/Resume mode. You can enable or disable this feature.

Enable or Disable the Hibernation Feature

The default settings are not enabled. To enable or disable the Hibernation feature follow these steps:

1 From the **Start** menu, select **Control Panel**.

2 Select “Choose what the power button does” or “Choose what closing the lid does”, then make your selections (Do Nothing, Sleep, Hibernate, or Shut Down).

Windows Power Management

The Power Options icon located in the Control Panel allows you to configure some power management settings. For example, you can use the Power Options to set the timeout values for turning off the display and hard disks whether you are running the notebook on battery power or one of the adapters.

Restarting the System

If your system is on and you need to restart it, be sure that you use the following procedure.

1 Click the **Start** button, and then move the mouse over the right arrow.

2 Select the desired action from the list.

3 Click **OK** to restart your notebook. Your notebook will shut down and then reboot.

TURNING OFF YOUR LIFEBOOK NOTEBOOK WITHOUT EXITING WINDOWS OR TURNING ON YOUR NOTEBOOK WITHIN 10 SECONDS OF THE NOTEBOOK BEING SHUT OFF MAY CAUSE AN ERROR WHEN YOU START THE NEXT TIME.

Powering Off

Before turning off the power, check that the hard drive/optical drive access indicator is off. If you turn off the power while accessing a disk there is a risk of data loss. To ensure that your notebook shuts down without error, use the Windows shut down procedure.

- BE SURE TO CLOSE ALL FILES, EXIT ALL APPLICATIONS PRIOR TO TURNING OFF THE POWER. IF FILES ARE OPEN WHEN YOU TURN THE POWER OFF, YOU WILL LOSE ANY CHANGES THAT HAVE NOT BEEN SAVED, AND MAY CAUSE DISK ERRORS.
- ALWAYS POWER OFF THE COMPUTER BEFORE TRANSPORTING AND/OR PACKAGING IT. AFTER SHUTTING DOWN THE SYSTEM, WAIT UNTIL THE STATUS LED PANEL INDICATES POWER OFF CONDITION (I.E., NO LIGHTS ARE ILLUMINATED).
- IT IS POSSIBLE THAT THE UNIT MAY NOT AUTOMATICALLY GO TO POWER OFF OR HIBERNATE MODE WHEN YOU CLOSE THE LID. THIS SITUATION MAY OCCUR DUE TO PRE-OS BOOT PASSWORD SECURITY SETTINGS OR SOME OTHER APPLICATION RUNNING ON THE COMPUTER.
- ATTEMPTING TO TRANSPORT THE COMPUTER WHILE POWER IS ON MAY DAMAGE THE NOTEBOOK DUE TO SHOCK OR OVERHEATING SINCE THE AIR VENTS MAY BE BLOCKED OR RESTRICTED.

Using the correct procedure to shut down from Windows allows your notebook to complete its operations and turn off power in the proper sequence to avoid errors. The proper sequence is:

1. Click the **Start** button, and then click **Shut Down**.
2. Select the **Shut Down** option from within the Windows Shut Down dialog box.
3. Click **OK** to shut down your notebook.

If you are going to store your notebook for a month or more see Care and Maintenance Section.

Chapter 3

User-Installable Features

Lithium ion Battery

Your LifeBook notebook has a Lithium ion battery that provides power for operating your notebook when no external power source is available. The battery is durable and long lasting, but should not be exposed to extreme temperatures, high voltages, chemicals or other hazards.

The Lithium ion battery operating time may become shorter if it is used under the following conditions:

- When used at temperatures that exceed a low of 5°C or a high of 35°C. Extreme temperatures not only reduce charging efficiency, but can also cause battery deterioration. The Charging icon on the Status Indicator panel will flash when you try to charge a battery that is outside its operating temperature range. *See "Status Indicator Panel" on page 21.*
- When using a high current device such as a modem, Multi-Format DVD Writer, CD-ROM drive, optical drive, or the hard drive, using the AC adapter will conserve your battery life.

DO NOT LEAVE A FAULTY BATTERY IN YOUR NOTEBOOK. IT MAY DAMAGE YOUR AC ADAPTER, OPTIONAL AUTO/AIRLINE ADAPTER, ANOTHER BATTERY OR YOUR NOTEBOOK ITSELF. IT MAY ALSO PREVENT OPERATION OF YOUR NOTEBOOK BY DRAINING ALL AVAILABLE CURRENT INTO THE BAD BATTERY.

- Actual battery life will vary based on screen brightness, applications, features, power management settings, battery condition and other customer preferences. CD-ROM drive, Multi-Format DVD Writer, or hard drive usage may also have a significant impact on battery life. The battery charging capacity is reduced as the battery ages. If your battery is running low quickly, you should replace it with a new one.
- Under federal, state, or local law it may be illegal to dispose of batteries by putting them in the trash. Please take care of our environment and dispose of batteries properly. Check with your local government authority for details regarding recycling or disposing of old batteries. If you cannot find this information elsewhere, contact your support representative at 1-800-8FUJITSU (1-800-838-5487)

Recharging the Batteries

If you want to know the condition of the primary Lithium ion battery, check the Battery Level indicator located on the Status Indicator panel. The indicator changes as the battery level changes.

The Lithium ion battery is recharged internally using the AC adapter or Auto/Airline adapter. To recharge the battery make sure the battery that needs to be charged is installed in your LifeBook notebook and connect the AC or Auto/Airline adapter.

Make sure that the Battery Charging indicator and the percentage charge is displayed by the Battery Level indicator on the Status Indicator Panel.

There is no memory effect on the Lithium ion battery therefore you do not need to discharge the battery completely before recharging. The charge times will be significantly longer if your notebook is in use while the battery is charging. If you want to charge the battery more quickly, put your notebook into Standby mode, or turn it off while the adapter is charging the battery. *(See Power Management on page 46 for more information on Standby mode and shutdown procedure)*

USING HEAVY CURRENT DEVICES SUCH AS THE MODEM OR FREQUENT DVD/CD-RW/CD-ROM ACCESSES MAY PREVENT CHARGING COMPLETELY.

Low Battery State

When the battery is running low, a low battery notification message will appear. If you do not respond to the low battery message, the batteries will continue to discharge until they are too low to operate. When this happens, your notebook will go into Standby mode. There is no guarantee that your data will be saved once the notebook reaches this point.

- ONCE THE LOW BATTERY NOTIFICATION MESSAGE APPEARS, YOU NEED TO SAVE ALL YOUR ACTIVE DATA AND PUT YOUR LIFEBOOK NOTEBOOK INTO STANDBY MODE UNTIL YOU CAN PROVIDE A NEW POWER SOURCE. YOU SHOULD PROVIDE A CHARGED BATTERY, AN AC POWER ADAPTER, OR AUTO/AIRLINE ADAPTER AS SOON AS POSSIBLE.
- WHEN YOU ARE IN STANDBY MODE THERE MUST ALWAYS BE AT LEAST ONE POWER SOURCE ACTIVE. IF YOU REMOVE ALL POWER SOURCES WHILE YOUR LIFEBOOK NOTEBOOK IS IN STANDBY MODE, ANY DATA THAT HAS NOT BEEN SAVED TO THE HARD DRIVE WILL BE LOST.

Once your notebook goes into Dead Battery Suspend mode you will be unable to resume operation until you provide a source of power either from an adapter, or a charged battery. Once you have provided power, you will need to press the Power/Suspend/Resume button to resume operation.

In the Dead Battery Suspend mode, your data can be maintained for some time, but if a power source is not provided promptly, the Power indicator will stop flashing and go out, meaning that you have lost the data that was not stored. Once you provide power, you can continue to use your notebook while an adapter is charging the battery.

Shorted Batteries

The Status Indicator panel uses an LED below the battery outline of the Battery Level indicator to display the operating level available in that battery. If this display shows a Shorted Battery, it means the battery is damaged and must be replaced so it does not damage other parts of your LifeBook notebook.

Replacing the Battery

With the purchase of an additional battery, you can have a fully charged spare to swap with one that is not charged. There are two ways to swap batteries, cold-swapping and hot-swapping:

Cold-swapping Batteries

To cold-swap batteries in your battery bay follow these easy steps:

1. Have a charged battery ready to install.
2. Shut down your notebook and disconnect the AC adapter.
3. While pushing the battery bay release latches towards the battery pack, lift the battery out of the bay using the latches to lift it.
4. Insert a new battery into the bay, and press it down so that the latches click into place.
5. Plug in the AC adapter and turn the power on.

Hot-swapping Batteries

To hot-swap batteries in your battery bay follow these easy steps:

BE SURE TO PLUG IN AN AC ADAPTER PRIOR TO REMOVING THE BATTERY. THERE IS NO BRIDGE BATTERY PRESENT TO SUPPORT THE SYSTEM WHILE THE BATTERY IS BEING REPLACED. IF YOU DO NOT USE AN AC ADAPTER YOU WILL LOSE ANY UNSAVED FILES.

1. Plug an AC Adapter into the system and connect it to a power outlet.

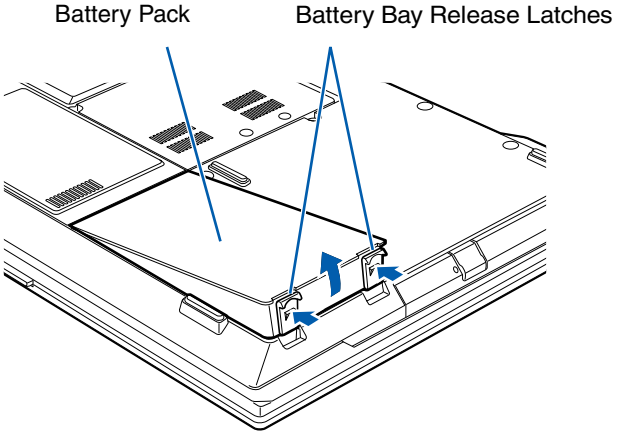


Figure 19. Removing a Battery

2 Follow steps 3 through 6 in “Cold Swapping Batteries”.

IF THE LITHIUM ION BATTERY CONNECTOR IS NOT FULLY SEATED, YOU MAY NOT BE ABLE TO USE YOUR NOTEBOOK OR CHARGE YOUR BATTERY.

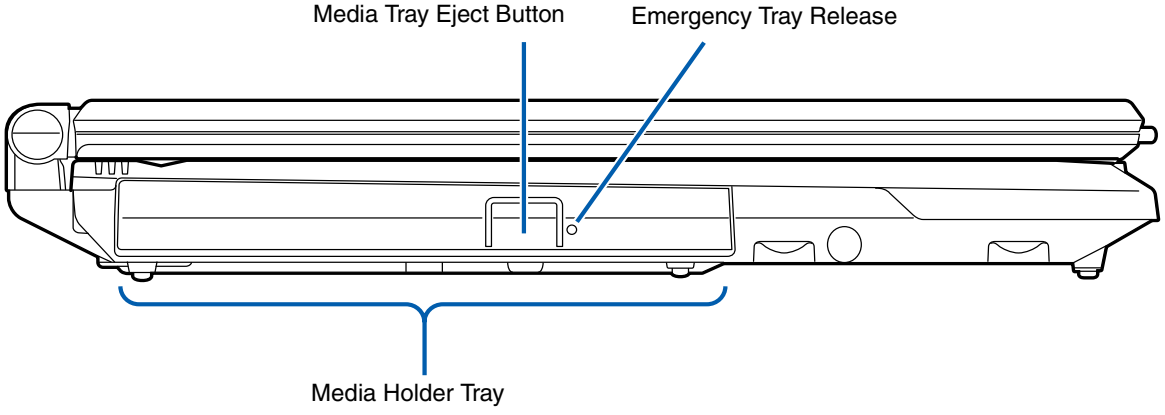


Figure 20. Optical Drive

Optical Drive

There is a variety of media available to use with your Multi-Format DVD Writer, also known as an “optical drive”.

DVD-R and DVD-RW discs hold up to 4.7 GB of data (DVD-R discs used with Multi-Format Dual-Layer DVD writer hold up to 8.5 GB). A DVD-R disc can only be written to once; DVD-RW discs can be written to over and over. DVD-R and DVD-RW discs can be played on most standard players.

CD-R and CD-RW discs hold up to 640 MB of data. A CD-R disc can only be written to once; CD-RW discs can be written to over and over.

Your system contains the following optical drive:

Dual-Layer Multi-Format DVD Writer: This drive allows you to access movies, software, and audio DVD/CDs as well as to read and write to CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, and DVD RAM discs. The dual-layer architecture allows you to record up to 8.5 GB of data on DVD+R discs.

Media Player Software

With the Dual-Layer Multi-Format DVD Writer and media player software you can play DVD movies and music CDs on your notebook. The media player includes controls which allow you to take full advantage of the features of a DVD movie, as well as standard features such as fast forward, fast reverse, pause, etc. With this drive you can also burn onto recordable DVD-R/RW, DVD+R/RW, or CD-R/RW discs.

- DO NOT OPERATE YOUR OPTICAL DRIVE UNLESS YOUR LIFEBOOK NOTEBOOK IS SITTING ON A FLAT SURFACE. USING A DRIVE WHEN THE SYSTEM IS NOT LEVEL MAY DAMAGE THE DRIVE OR PREVENT PROPER OPERATION.
- PROLONGED USE OF THE OPTICAL DRIVE, SUCH AS WATCHING A DVD MOVIE, WILL SUBSTANTIALLY REDUCE YOUR BATTERY LIFE IF NO EXTERNAL POWER SOURCE IS ATTACHED.

Loading Media on Your Drive

To load a disc into your optical drive:

1. Push and release the eject button on the front of the optical drive to open the holder tray. The tray will come out of the LifeBook notebook a short distance.
2. Gently pull the tray out until a media disc can easily be placed in the tray.

- YOU SHOULD PERIODICALLY CHECK THE FUJITSU WEBSITE AT US.FUJITSU.COM/COMPUTERS FOR THE MOST CURRENT DRIVERS.
- ALL LIFEBOOK DVD PLAYERS ARE SET TO PLAY DVD TITLES WITH REGION CODE NUMBER 1 WHICH IS SPECIFIED FOR THE NORTH AMERICAN MARKET. THE REGION NUMBER IS A REGIONAL RESTRICTION CODE DEFINED BY THE DVD FORUM ACTING ON HOLLYWOOD REQUIREMENTS. DIFFERENT REGION CODES ARE RECORDED ON VIDEO DVD TITLES FOR PUBLICATION IN DIFFERENT AREAS OF THE WORLD. IF THE REGIONAL CODE OF THE DVD PLAYER DOES NOT MATCH THE REGIONAL CODES ON THE TITLES, THEN PLAYBACK IS IMPOSSIBLE.
- YOU CAN CHANGE THE REGION CODE ON THE DVD PLAYER USING THE PROPERTIES MENU OF THE DVD SOFTWARE. NOTE, HOWEVER, THAT **YOU CAN ONLY CHANGE THE REGION CODE UP TO FOUR TIMES.** AFTER THE 4TH CHANGE, THE LAST CODE ENTERED BECOMES PERMANENT, AND CANNOT BE CHANGED.

3 Place the media into the tray, label side up, with the hole in the center of the disc. Snap the disc onto the raised circle in the center of the tray.

4 Gently push the holder tray back in until you hear a click

IF YOU HAVE DISABLED THE AUTO INSERT NOTIFICATION FUNCTION, YOU WILL HAVE TO START THE DRIVE EITHER BY USING MY COMPUTER OR FROM WITHIN WINDOWS EXPLORER, SINCE YOUR NOTEBOOK WILL NOT AUTOMATICALLY RECOGNIZE THAT MEDIA HAS BEEN LOADED.

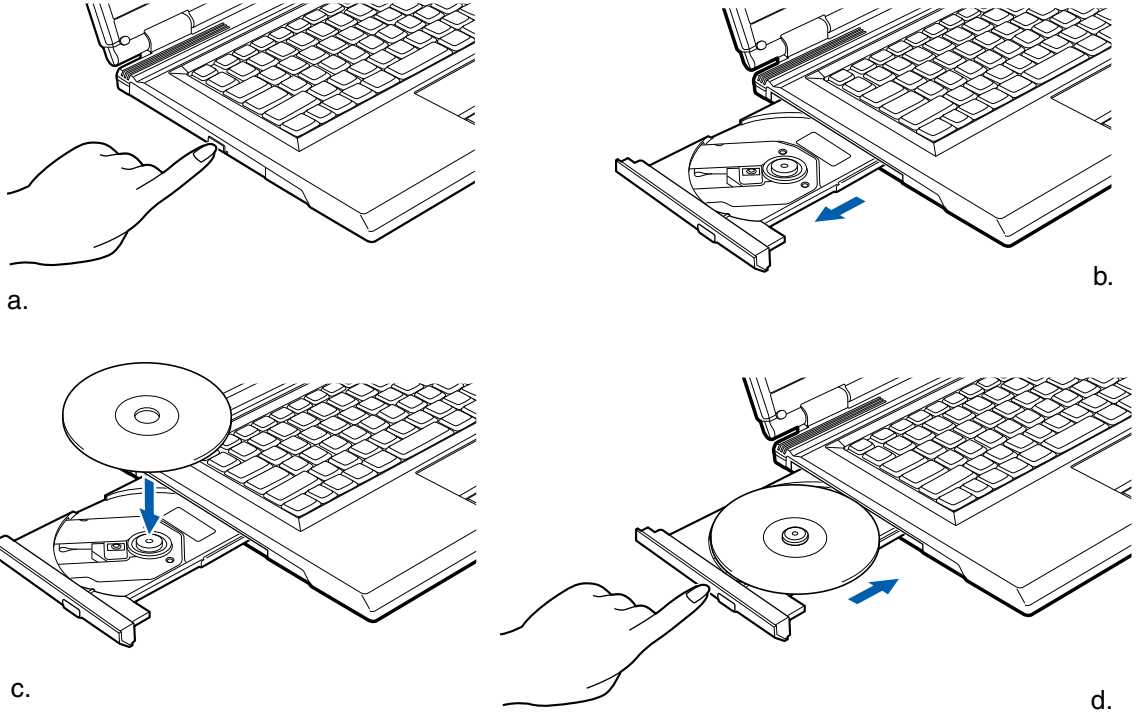


Figure 21. Loading/Ejecting Media

Removing Media

1. Push and release the eject button on the front of the optical drive. This will stop the drive and the holder tray will come out of the LifeBook notebook a short distance.
2. Gently pull the tray out until the disc can easily be removed from the tray.
3. Carefully remove the media disc from the holder tray.
4. Gently push the holder tray back in until you hear a click.

Emergency Optical Drive Tray Release

If for some reason the eject button fails, you can open the media tray with a paper clip or similar tool inserted into the eject hole in the right side of the front of the tray. Straighten one side of a paper clip and push it gently into the hole. The tray will pop out.

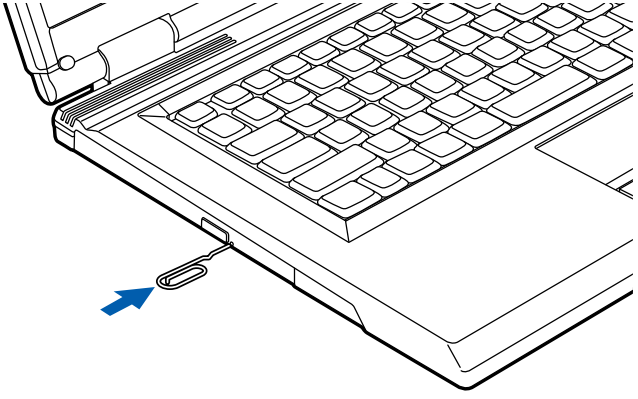


Figure 22. Emergency Tray Release

Using the Media Player Software

DEPENDING UPON ITS CONFIGURATION, YOUR SYSTEM MAY NOT HAVE THE MEDIA PLAYER SOFTWARE PRE-INSTALLED. IF IT IS NOT INSTALLED, REFERENCE THE DOCUMENTATION THAT ACCOMPANIES THE MEDIA APPLICATION.

Starting a DVD Movie

1. Insert the DVD into the optical drive of the notebook. If the CD AutoRun feature activates, skip Step 2.
2. The first time you insert a movie into the DVD/CD-RW tray, you will be prompted to select what you want the system to do when discs are inserted (e.g., start automatically or wait for a prompt). Until you make a selection, you will receive the same prompt whenever you insert a disc.
3. Click **OK** to close the About DVD Player Performance dialog box and the movie will begin.

Opening the Media Player Control Panel

With most DVD-ROMs, you have the option of altering how the movie should play and what you wish to view. You can do this by using the media player control panel and the mouse.

1. Right-click on the movie screen to open a dropdown menu for options.
2. Select **View,** then **Player** for all controls available. This will open the control panel at the bottom of the screen.

Using the Media Player Control Panel

The media player software allows you to watch the movie much like a VCR player. You can pause, rewind, fast-forward and stop the movie at any point.

1. To pause the movie, click the on-screen ⏸ button.
2. To rewind the movie, click the ⏪ button to rewind to a specific portion of the movie, or the ⏮ button to return to the opening screen.
3. To fast-forward the movie, click the ⏩ button to forward to a specific portion of the movie, or the⏭ button to jump to the ending credits.
4. To stop the movie, click the ■ button.

Exiting the Media Player

1. Click the ✕ located in the upper right corner of the title bar. This will open a media player dialog box.
2. Click Yes to stop and exit the movie, or No to close the media player dialog box and return to the movie.

Using Media Player on Battery Power

Since optical drives consume a lot of power, your overall battery life will be significantly shorter when operating the optical drive continuously (such as watching a DVD movie) than during standard operation. Many movie run-times are longer than your notebook can support on a single charged battery. If you are watching a DVD movie on battery power you may need to swap in an additional, charged battery or attach AC power during the movie to view it in its entirety.

- MANY MOVIE RUN-TIMES ARE LONGER THAN YOUR SYSTEM CAN SUPPORT ON A SINGLE BATTERY. IF YOU ARE WATCHING A DVD MOVIE ON BATTERY POWER YOU MAY NEED TO SWAP IN AN ADDITIONAL, CHARGED BATTERY OR ATTACH AC POWER DURING THE MOVIE TO VIEW IT IN ITS ENTIRETY.
- AN ADDITIONAL FULLY-CHARGED BATTERY IS HIGHLY RECOMMENDED IF YOU WILL BE WATCHING DVD MOVIES ON BATTERY POWER. IF YOU DON'T HAVE AN ADDITIONAL BATTERY, YOU MAY PURCHASE ONE EITHER ONLINE AT: HTTP://WWW.COMPUTERS.US.FUJITSU.COM OR BY CALLING 1-877-372-3473.

To Watch a Movie on Battery Power:

1. Have an additional full-charged battery or your AC adapter ready for use.
2. Start watching your DVD movie.
3. When the low battery warning occurs, immediately stop the movie and exit the media player.

IF YOU DO NOT STOP THE MEDIA PLAYER QUICKLY AND THE LIFEBOOK NOTEBOOK ATTEMPTS TO AUTO-SUSPEND (CRITICAL BATTERY LOW STATE) THE LIFEBOOK NOTEBOOK WILL SHUT DOWN IMPROPERLY. IF THIS OCCURS, YOU MAY NEED TO PERFORM A HARD RESET AND FOLLOW THE INSTRUCTIONS, IF ANY, PRESENTED TO YOU BEFORE THE SYSTEM WILL REBOOT.

4. Power down your notebook and replace the discharged battery with an additional fully-charged battery. If you do not have an additional battery, you may attach AC power as soon as you see the low battery warning.
5. Resume operation by pressing the Suspend button again. This is not required if you attached AC power without entering standby mode.
6. Restart your media player, locate and skip to the chapter of the movie you were last watching, then continue watching your DVD movie.

SOME SHORTER DVD MOVIES MAY NOT REQUIRE YOU TO SWAP BATTERIES OR ATTACH AC POWER TO COMPLETE THEM. HOWEVER, IT IS BEST TO BE PREPARED SINCE ACTUAL BATTERY LIFE WHILE OPERATING THE OPTICAL DRIVE CANNOT BE GUARANTEED.

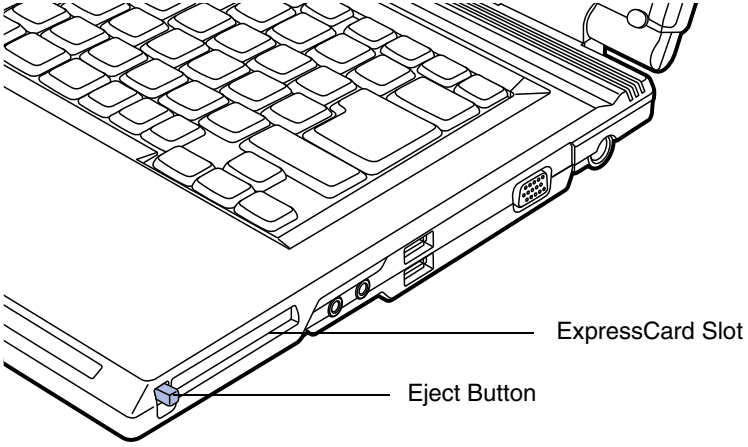


Figure 23. Installing/Removing ExpressCard

Using ExpressCards

Your LifeBook notebook supports ExpressCards™, which can perform a variety of functions depending on which type of card you install. Some available ExpressCards:

- Gigabit Ethernet Local area network (LAN) cards
- IEEE1394 cards
- S-ATA II cards
- IEEE802.11n WLAN cards

For further information, refer to the instructions supplied with your card(s).

Installing ExpressCards

There are two different width ExpressCards: 34 mm and 54 mm. The connector inside the slot is located on the left-hand side of the slot. If you insert a 34 mm card, be sure to align it with the left side of the slot when inserting it.

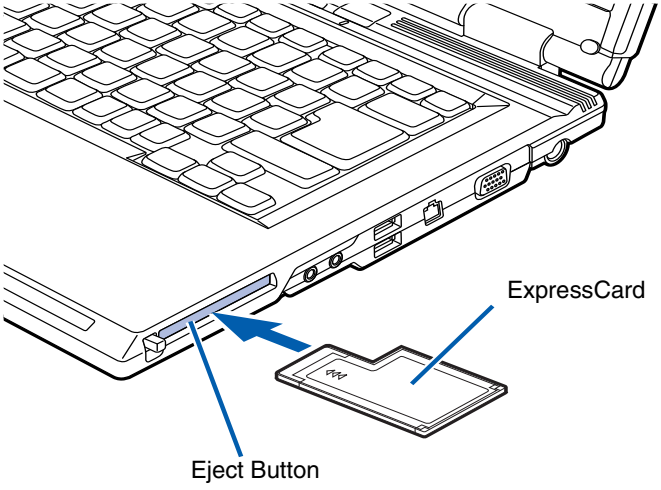


Figure 24. Installing/Removing ExpressCards

- INSTALLING OR REMOVING AN EXPRESSCARD DURING YOUR NOTEBOOK'S SHUTDOWN OR BOOTUP PROCESS MAY DAMAGE THE CARD AND/OR YOUR NOTEBOOK.
- DO NOT INSERT AN EXPRESSCARD INTO A SLOT IF THERE IS WATER OR ANY OTHER SUBSTANCE ON THE CARD AS YOU MAY PERMANENTLY DAMAGE THE CARD, YOUR NOTEBOOK, OR BOTH.

YOU MAY BE REQUIRED TO LOG ON AS ADMINISTRATOR OR A MEMBER OF THE ADMINISTRATOR'S GROUP TO COMPLETE THIS PROCEDURE. IF YOUR COMPUTER IS CONNECTED TO A NETWORK, NETWORK POLICY SETTINGS MAY ALSO PREVENT YOU FROM COMPLETING THIS PROCEDURE.

See your ExpressCard manual for instructions on the installation of your card. Some cards may require that your notebook is off while installing them.

To install an ExpressCard, follow these steps:

1. When not in use, you should keep the ExpressCard plug inserted in the slot to prevent system contamination.
2. Make sure there is no ExpressCard or ExpressCard plug currently in the slot. If there is, see Removing ExpressCards.
3. If the eject button is extended, press it in until it clicks.
4. Insert your ExpressCard into the slot with the product label facing up. If you are inserting a 34 mm card, be sure to align it with the left side of the slot when inserting it.
5. Push the card firmly into the slot until it is seated in the connector.

Removing ExpressCards

See your ExpressCard manual for specific instructions on removing your card. Some cards may require your notebook to be in Standby Mode or Off during removal.

- Windows has a shutdown procedure for ExpressCards that must be followed before removing a card. (Review your operating system manual for the correct procedure.) It is good practice to remove devices using the Safely Remove Hardware icon in the system tray.
- If the dialog box states that the device cannot be removed, you must save all of your open files, close any open applications and shut down your notebook.

To remove an ExpressCard, follow these steps:

1. Unlock the card or card plug from the slot by pressing the eject button associated with the slot in which the card is located. When pressed, the button will pop out.
2. Firmly press the button again until it is flush with the notebook. This will eject the card slightly out of the slot allowing you to remove the card.

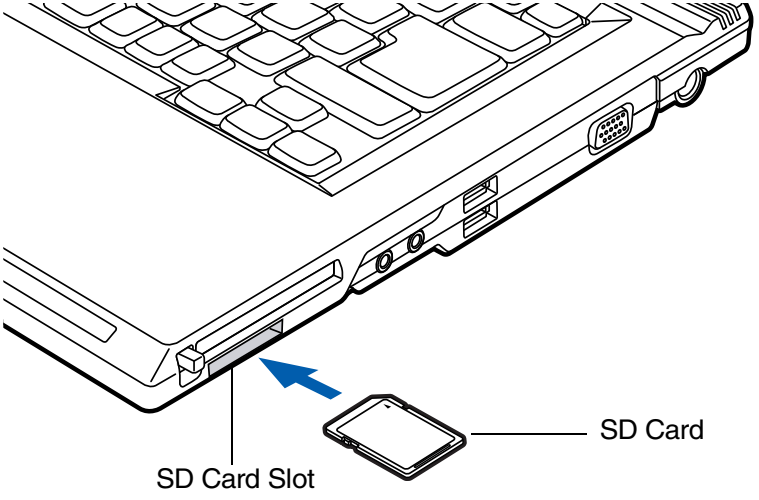


Figure 25. Installing a Secure Digital Card

Secure Digital Cards

Your LifeBook notebook supports Secure Digital (SD) cards, on which you can store and transfer data to and from a variety of digital devices. These cards use flash memory architecture, which means they don't need a power source to retain data.

Secure Digital is a flash memory technology that allows you to record, transfer and share digital content, such as digital pictures, movies, music, voice, and computer data and applications. SD Cards allow portable storage among a variety of devices, such as cell phones, GPS systems, digital cameras, and PDAs. SD Cards transfer data quickly, with low battery consumption.

Installing SD Cards

SD Cards are installed in the SD Card slot. To install an SD Card, follow these steps:

INSTALLING OR REMOVING AN SD CARD DURING YOUR LIFEBOOK NOTEBOOK'S SHUTDOWN OR BOOTUP PROCESS MAY DAMAGE THE CARD AND/OR YOUR LIFEBOOK NOTEBOOK.

DO NOT INSERT A CARD INTO A SLOT IF THERE IS WATER OR ANY OTHER SUBSTANCE ON THE CARD AS YOU MAY PERMANENTLY DAMAGE THE CARD, YOUR LIFEBOOK NOTEBOOK, OR BOTH.

1. See your specific card manual for instructions on the installation of your card. Some cards may require that your notebook is off while installing them.
2. Make sure there is no card currently in the slot. If there is, see Removing an SD Card.
3. Insert your card into the slot with the product label facing up.
4. Push the card firmly into the slot until it is seated in the connector.

Removing an SD Card

To remove an SD Card, simply pull it out of the SD Card slot.

SEE YOUR CARD MANUAL FOR SPECIFIC INSTRUCTIONS ON THE REMOVAL OF YOUR CARD. SOME CARDS MAY REQUIRE YOUR LIFEBOOK NOTEBOOK TO BE IN STANDBY MODE OR OFF WHILE REMOVING THEM.

Memory Upgrade Module

Your Fujitsu LifeBook notebook comes with a minimum of 1GB of high speed Double Data Rate Synchronous Dynamic RAM (DDR2-533 SDRAM) factory installed. To increase your notebook's memory capacity, you may install an additional memory upgrade module. The memory upgrade must be a dual-in-line (DIMM) SDRAM module. To ensure 100% compatibility, purchase the SDRAM module only from the Fujitsu web store at www.shopfujitsu.com.

- Do not remove any screws from the memory upgrade module compartment except the ones specifically shown in the directions for installing and removing the memory upgrade module.
- The memory upgrade module can be severely damaged by electrostatic discharge (ESD). To minimize risk to the module, observe the following precautions:
  - Before handling a memory module, touch a grounded metal object to discharge static electricity built up in your body.
  - When installing or removing a memory module, hold it by the edge so as not to touch any contacts or chips. Be careful not to touch any internal computer terminals or components; the oil from your fingers could cause a short to the components.
  - Be sure to power down your system before adding or removing memory modules. Even if the system is in hibernate or standby states, data could be lost or the memory could be damaged if power is still available to the system.

Installing Memory Upgrade Modules

1. Turn off power to your notebook, remove any power adapter (AC or auto/airline). Remove the battery.
2. Make sure that all the connector covers are closed.
3. Turn the notebook bottom side up, and remove the screw from the memory upgrade module compartment.
4. Remove the cover.
5. Remove the memory upgrade module from the static guarded sleeve.

6 Align the memory upgrade module with the component side up. Align the connector edge of the memory upgrade module with the connector slot in the compartment. Be sure the alignment keys line up with those in the slot.

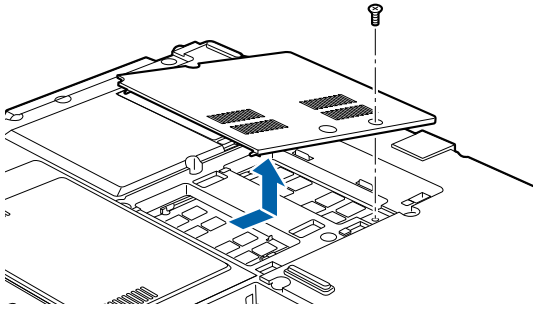


Figure 26. Opening the Memory Compartment

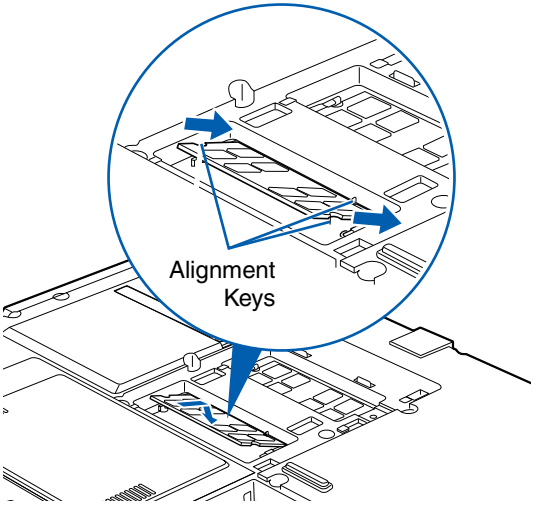


Figure 27. Installing a Memory Module

7 Insert the memory upgrade module at a 45° angle. Press the connector edge of the module firmly down and into the connector until it lodges under the retaining clip. You'll hear a click when it is properly in place.

8 Replace the cover and reinstall the screws.

THE MEMORY UPGRADE MODULE IS NOT SOMETHING YOU ROUTINELY REMOVE FROM YOUR NOTEBOOK. ONCE IT IS INSTALLED, YOU CAN LEAVE IT IN PLACE UNLESS YOU WANT TO CHANGE SYSTEM MEMORY CAPACITY.

Removing a Memory Upgrade Module

1. Perform steps 1 through 4 of Installing a Memory Upgrade Module.
2. Pull the clips sideways away from each side of the memory upgrade module at the same time.
3. While holding the clips out, remove the module from the slot by lifting it up and pulling it away from your notebook.
4. Store the memory upgrade module in a static guarded sleeve.
5. Replace the cover and reinstall the screws.

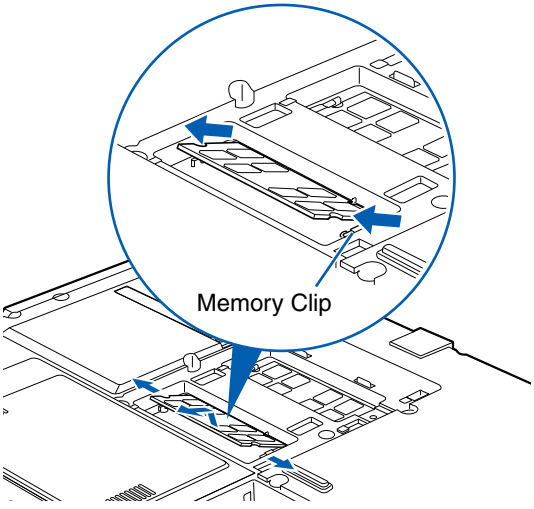


Figure 28. Removing memory module

Checking the Memory Capacity

Once you have changed the system memory capacity by replacing the installed module with a larger one, be sure to check that your notebook has recognized the change.

Check the memory capacity by clicking [Start] -> Control Panel -> System and Maintenance -> System. The amount of memory is displayed next to “Memory - RAM:”

There may be a variation between the actual memory size and what is displayed. This is possible if your system is configured with an integrated Intel Graphics Media Accelerator X3100 which dynamically allocates system memory to accelerate graphics performance.

IF THE TOTAL MEMORY DISPLAYED IS INCORRECT, CHECK THAT YOUR MEMORY UPGRADE MODULE IS PROPERLY INSTALLED. (IF THE MODULE IS PROPERLY INSTALLED AND THE CAPACITY IS STILL NOT CORRECTLY RECOGNIZED, SEE TROUBLESHOOTING ON PAGE 77.

Device Ports

Your Fujitsu LifeBook notebook and the optional Port Replicator come equipped with multiple ports to which you can connect external devices including: disk drives, keyboards, printers, etc.

Modem (RJ-11) Telephone Jack

The modem (RJ-11) telephone jack is used for the internal modem. To connect the telephone cable follow these easy steps:

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Plug the other end of the telephone cable into a telephone outlet.

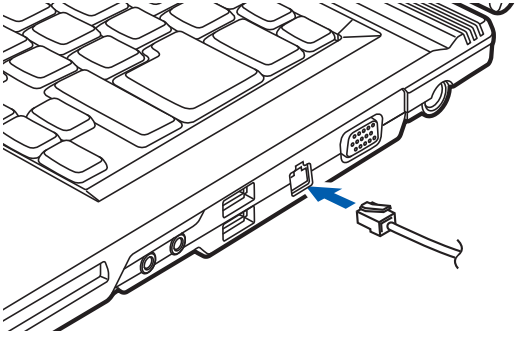


Figure 29. Connecting the Modem

The modem sound may initially be deactivated. To activate modem sound follow these easy steps.

1. Select [Start] -> Control Panel.
2. Select Classic View in the left pane.
3. Double-click Phone and Modems. You may initially need to enter your area code in order to open the Phone and Modem Options window.
4. Select the Modems tab, and click the [Properties] button.

5 Select the Modem tab and adjust the volume as necessary.

THE INTERNAL MODEM IS NOT INTENDED FOR USE WITH DIGITAL PBX SYSTEMS. DO NOT CONNECT THE INTERNAL MODEM TO A DIGITAL PBX AS IT MAY CAUSE SERIOUS DAMAGE TO THE INTERNAL MODEM OR YOUR ENTIRE LIFEBOOK NOTEBOOK. CONSULT YOUR PBX MANUFACTURER'S DOCUMENTATION FOR DETAILS. SOME HOTELS HAVE DIGITAL PBX SYSTEMS. BE SURE TO FIND OUT BEFORE YOU CONNECT YOUR MODEM.

- THE INTERNAL MODEM IS DESIGNED TO THE ITU-T V.90 STANDARD. ITS MAXIMUM SPEED OF 53000BPS IS THE HIGHEST ALLOWED BY FCC, AND ITS ACTUAL CONNECTION RATE DEPENDS ON THE LINE CONDITIONS. THE MAXIMUM SPEED IS 33600BPS AT UPLOAD.
- THE INTERNAL MODEM ON ALL LIFEBOOK NOTEBOOKS FROM FUJITSU ARE CERTIFIED FOR USE IN THE UNITED STATES AND CANADA. THE MODEM MAY BE CERTIFIED IN OTHER COUNTRIES.

Internal LAN (RJ-45) Jack

The internal LAN (RJ-45) jack is used for a 10Base-T/100Base-Tx Ethernet LAN connection. You may need to configure your notebook to work with your particular network. (Please refer to your network administrator for information on your network configuration.) To connect the LAN cable follow these easy steps:

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Plug the other end of the cable into a LAN outlet.

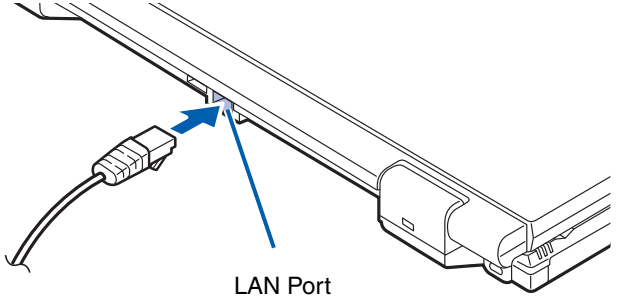


Figure 30. Connecting LAN Device

Universal Serial Bus Ports

The Universal Serial Bus 2.0 ports (USB) allow you to connect USB devices such as external game pads, pointing devices, keyboards and/or speakers. There are three USB 2.0 ports on your notebook: two on the right side and one on the rear.

In order to connect a USB device follow these steps:

1 Align the connector with the port opening, then push the connector into the port until it is seated.

DUE TO THE ONGOING CHANGES IN USB TECHNOLOGY AND STANDARDS, NOT ALL USB DEVICES AND/OR DRIVERS ARE GUARANTEED TO WORK.

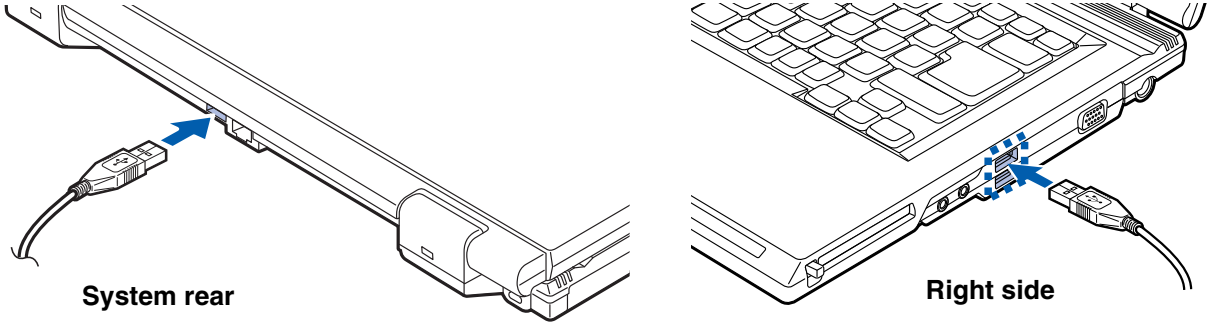


Figure 31. Connecting a USB Device

Headphone Jack

The headphone jack allows you to connect headphones or powered external speakers to your notebook. Your headphones or speakers must be equipped with a 1/8” (3.5 mm) stereo mini-plug. In order to connect headphones or speakers follow these easy steps:

1 Align the connector with the port opening.

2 Push the connector into the port until it is seated.

IF YOU PLUG HEADPHONES INTO THE HEADPHONE JACK, BUILT-IN STEREO SPEAKERS WILL BE DISABLED.

Microphone Jack

The microphone jack allows you to connect an external mono microphone. Your microphone must be equipped with a 1/8”(3.5 mm) stereo mini-plug in order to fit into the microphone jack of your notebook. In order to connect a microphone follow these easy steps:

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

External Video Port

The external video port allows you to connect an external monitor or LCD projector. In order to connect an external video device, follow these easy steps:

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Tighten the two hold-down screws, located on each end of the connector.

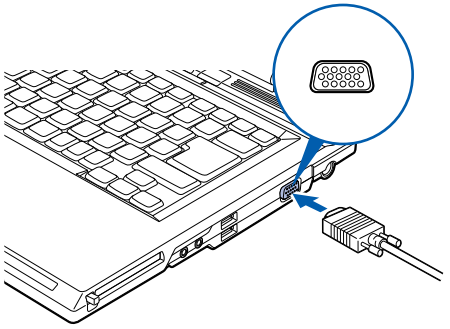


Figure 32. Connecting an External Video Device

PRESSING THE [FN] + [F10] KEYS ALLOWS YOU TO CHANGE YOUR SELECTION OF WHERE TO SEND YOUR DISPLAY VIDEO. EACH TIME YOU PRESS THE KEY COMBINATION, YOU WILL STEP TO THE NEXT CHOICE, STARTING WITH THE BUILT-IN DISPLAY PANEL ONLY, MOVING TO THE EXTERNAL MONITOR ONLY, FINALLY MOVING TO BOTH THE BUILT-IN DISPLAY PANEL AND AN EXTERNAL MONITOR.

Chapter 4

Troubleshooting Your LifeBook

Troubleshooting

There may be occasions when you encounter simple setup or operating problems that you can solve on the spot, or problems with peripheral devices that can be solved by replacing the device. The information in this section helps you isolate and resolve some of these straightforward issues and identify failures that require service.

Identifying the Problem

If you encounter a problem, go through the following procedure before pursuing complex troubleshooting:

1. Turn off your LifeBook notebook.
2. Make sure the AC adapter is plugged into your notebook and to an active AC power source.
3. Make sure that any card installed in the ExpressCard slot is seated properly. You can also remove the card from the slot, thus eliminating it as a possible cause of failure.
4. Make sure that any devices connected to the external connectors are plugged in properly. You can also disconnect such devices, thus eliminating them as possible causes of failure.
5. Turn on your notebook. Make sure it has been off at least 10 seconds before you turn it back on.
6. Go through the boot sequence.

7 If the problem has not been resolved, refer to the Troubleshooting Table, that follows, for more detailed troubleshooting information.

IF YOU KEEP NOTES ABOUT WHAT YOU HAVE TRIED, YOUR SUPPORT REPRESENTATIVE MAY BE ABLE TO HELP YOU MORE QUICKLY BY GIVING ADDITIONAL SUGGESTIONS OVER THE PHONE.

8 If you have tried the solutions suggested in the Troubleshooting Table without success, contact your support representative:

Toll free: 1-800-8Fujitsu (1-800-838-5487)
E-mail: 8fujitsu@us.fujitsu.com
Web site: http://www.computers.us.fujitsu.com/support.

Before you place the call, you should have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Type of device connected, if any

See the Configuration Label on the bottom of your notebook for configuration and serial numbers.

Specific Problems

Using the Troubleshooting Table

When you have problems with your LifeBook notebook, try to find the symptoms under the Problem column of the troubleshooting table for the feature giving you difficulty. You will find a description of common causes for that symptom under the column Possible Cause and what, if anything, you can do to correct the condition under Possible Solutions. All possible causes or solutions may not apply to your notebook.

Troubleshooting Table

Problem	Page	Problem	Page
Audio Problems	page 80	USB Device Problems	page 82
DVD/CD-ROM Drive Problems	page 80	ExpressCard Problems	page 83
Hard Drive Problems	page 81	Power Failures	page 83
Keyboard or Mouse Problems	page 81	Shutdown and Startup Problems	page 86
Memory Problems	page 82	Video Problems	page 87
Modem Problems	page 82	Miscellaneous Problems	page 89

Problem	Possible Cause	Possible Solutions
Audio Problems		
There is no sound coming from the built-in speakers.	The volume is turned too low.	Adjust the volume control on your notebook and operating system. Use the [Fn+F9] key combination on your keyboard. Pressing [F9] repeatedly while holding [Fn] increases your notebook volume.
	The software volume control is set too low.	Manually adjusting the volume should dynamically adjust the volume of the operating (see above). If that doesn't work, adjust the sound volume control settings in your software or application.
	Headphones are plugged into your notebook.	Plugging in headphones disables the built-in speakers, remove the headphones.
	Software driver is not configured correctly.	The Audio Driver may be installed or reinstalled by using the Drivers and Applications CD that came with your LifeBook. Refer to your application and operating system documentation for help.
	The speakers have been muted using the Volume icon in the system tray.	Click on the Volume icon in the tool tray on the bottom right of the screen. (It looks like a speaker). If the Mute box is checked, click on it to uncheck it. You can also use the [Fn+F3] key combination to toggle the volume on and off. Pressing [F3] while holding [Fn] will toggle the audio mute.
DVD/CD-RW/CD-ROM Drive Problems		
LifeBook notebook fails to recognize DVD/CD-RW/CD-ROM's.	The disc is not pushed down onto raised center circle of the drive.	Open optical drive tray and re-install the disc properly.
	Optical drive tray is not latched shut.	Push on the front of the optical drive tray until it latches. If that doesn't work, pull out the modular drive latch to remove the device from the bay, then re-insert the drive until it latched; this ensures that the drive is properly seated.
	Incorrect DVD Player or no DVD Player software is installed.	Install DVD Player software. *(See "Media Player Software" on page 57 for more information.)*

Problem	Possible Cause	Possible Solutions
LifeBook notebook fails to recognize DVD/CD-RW/CD-ROM's. (continued)	Wrong drive designator was used for the disc in the application.	Verify the drive designator used by the application is the same as the one used by the operating system. When the operating system is booted from a DVD/CD, drive designations are automatically adjusted. Note that the drive designation can be changed with the Disk Management tool located at Administrative Tools -> Computer Management.
	DVD/CD-RW/CD-ROM is dirty or defective.	Wipe the disc with a non-abrasive CD cleaning cloth and reinsert. It if still will not work try another DVD/CD-RW/CD-ROM in the drive.
The drive access indicator on the Status Indicator Panel blinks at regular intervals with no disc in the tray or the drive is not installed.	The Windows auto insertion function is active and is checking to see if a disc is ready to run.	This is normal. However, you may disable this feature.
Hard Drive Problems		
You cannot access your hard drive.	The wrong drive designator was used by an application when a bootable disc was used to start the notebook.	Verify drive designator used by application is in use by the operating system. When the operating system is booted from a CD, drive designations are automatically adjusted.
	Security is set so your OS cannot be started without a password.	Verify your password and security settings.
Keyboard or Mouse Problems		
The built-in keyboard does not seem to work.	The notebook has gone into Standby mode.	Push the **Power/Suspend/Resume** button.
	Your application has locked out your keyboard.	Try to use your integrated pointing device to restart your system.

Problem	Possible Cause	Possible Solutions
You have installed an external keyboard or mouse, and it does not seem to work.	Your external device is not properly installed.	Re-install your device. *See "Device Ports" on page 72.*
	Your operating system software is not set up with correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
You have connected an external keyboard or a mouse and it seems to be locking up the system.	Your operating system software is not setup with correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
	Your system crashed.	Try to restart your notebook. I
Memory Problems		
Your System Properties screen does not show the correct amount of installed memory.	Your memory module is not properly installed.	Remove and re-install your memory upgrade module. *See "Memory Upgrade Module" on page 68.*
	You have a memory failure.	Check for Power On Self Test (POST) messages. *See "Power On Self Test Messages" on page 90.*
Modem Problems		
Messages about modem operation.	Messages about modem operation are generated by whichever modem application is in use.	See your application software documentation for additional information.
USB Device Problems		
You have installed a USB device, but the notebook does not recognize the device, or the device does not seem to work properly.	The device is not properly installed.	Remove and re-install the device. *See "Device Ports" on page 72.*

Problem	Possible Cause	Possible Solutions
You have installed a USB device, but the notebook does not recognize the device, or the device does not seem to work properly. (continued)	The device may have been installed while an application was running, so your notebook is not aware of its installation.	Close the application and restart your notebook.
	Your device may not have the correct software driver active.	See your software documentation and activate the correct driver.
ExpressCard Problems		
A card inserted in the ExpressCard slot does not work or is locking up the system.	The card is not properly installed.	Remove and re-install the card. *See "Using ExpressCards" on page 63.*
	The card may have been installed while an application was running, so your notebook is not aware of its installation.	Close the application and restart your notebook.
	Your software may not have the correct software driver active.	See your software documentation and activate the correct driver.
	You may have the wrong I/O address selected for your card device.	See your ExpressCard documentation to determine the required I/O address. Change the settings in the Device Manager
Power Failures		
You turn on your LifeBook notebook and nothing seems to happen.	The primary battery is installed but is faulty.	Use the Status Indicator panel to verify the presence and condition of the batteries. See "Status Indicator Panel" on page 21. If a battery is indicating a short, remove that battery and operate from another power source or replace that battery.

Problem	Possible Cause	Possible Solutions
You turn on your LifeBook notebook and nothing seems to happen. (continued)	The installed primary battery is completely discharged, there is no optional second battery installed or there is no power adapter installed.	Check the Status Indicator Panel to determine the presence and condition of the batteries. See “Status Indicator Panel” on page 21. Install a charged battery or a Power adapter.
	The battery or batteries are low.	Check the Status Indicator Panel to determine the presence and condition of the batteries. See “Status Indicator Panel” on page 21. Use a Power adapter to operate until a battery is charged or install a charged battery.
	The power adapter (AC or auto/airline) is not plugged in properly.	Verify that your adapter is connected correctly. *See “Power Sources” on page 35.*
	The power adapter (AC or auto/airline) is faulty.	Try a different Power adapter or install a charged optional second battery.
	The power adapter has no power from the AC outlet, airplane seat jack, or cigarette lighter.	Move the AC cord to a different outlet, check for a line switch or tripped circuit breaker for the AC outlet. If you are using an auto/airline adapter in a car make sure the ignition switch is in the On or Accessories position.
Your LifeBook notebook turns off all by itself.	The power management parameters are set for auto timeouts which are too short for your operating needs.	Press any button on the keyboard, or move the mouse to restore operation. If that fails, push the Power/Suspend/Resume button. Check your power management settings, or close your applications and go to the Power Options Properties located in the Control Panel to adjust the timeout values to better suit your needs.
	You have a battery failure.	Verify the condition of the batteries using the Status Indicator panel, and replace or remove any batteries that are shorted. *See “Status Indicator Panel” on page 21.*
	Your power adapter has failed or lost its power source.	Make sure the adapter is plugged in and the outlet has power.

Problem	Possible Cause	Possible Solutions
Your LifeBook notebook turns off all by itself. (continued)	You are operating on battery power and ignored a low battery alarm until the battery is at the dead battery state and the system has gone into Dead Battery Suspend mode.	Install a power adapter and then push the Power/Suspend/Resume button. *See "Power Sources" on page 35.*
Your LifeBook notebook will not work on battery alone.	The installed battery is dead.	Replace the battery with a charged one or install a power adapter.
	No batteries are installed.	Install a charged battery.
	The batteries are improperly installed.	Verify that the batteries are properly connected by re-installing them.
	Your installed batteries are faulty.	Verify the condition of the batteries using the Status Indicator panel and replace or remove any batteries that are shorted. *See "Status Indicator Panel" on page 21.*
The batteries seem to discharge too quickly.	You are running an application that uses a lot of power due to frequent hard drive or optical drive access, or use of a modem, LAN PC card, Wireless LAN, or Bluetooth device.	Use both the primary battery and an optional second battery and/or use a power adapter for this application when at all possible.
	The power savings features may be disabled.	Check the Power Options menu settings and adjust according to your operating needs.
	The brightness is turned all the way up.	Turn down the brightness adjustment. The higher the brightness the more power your display uses.

Problem	Possible Cause	Possible Solutions
The batteries seem to discharge too quickly. (continued)	The batteries are very old.	Replace the batteries.
	The batteries have been exposed to high temperatures.	Replace the batteries.
	The batteries are too hot or too cold.	Restore the notebook to normal operating temperature. Charging icon on the Status Indicator panel will flash when battery is outside of operating range.
Shutdown and Startup Problems		
The Suspend/Resume button does not work.	Suspend/Resume button is disabled.	IEnable the button by going to the Control Panel -> Power Options Properties and clicking on the Advanced tab. Select the “Choose what the power button does” option.
	There may be application software. conflict	Close all applications and try the button again.
The system powers up, and displays power on information, but fails to load the operating system.	The boot sequence settings of the setup utility are not compatible with your configuration.	Set the operating source by pressing the [ESC] key while the Fujitsu logo is on screen or use the [F2] key and enter the setup utility and adjust the source settings from the Boot menu. *See “BIOS Setup Utility” on page 42.*
	You have a secured system requiring a password to load your operating system.	Make sure you have the right password. Enter the setup utility and verify the Security settings and modify them as accordingly. *See “BIOS Setup Utility” on page 42.*
	Internal hard drive was not detected.	Use the BIOS setup utility or Primary Master submenu, located within the Main menu, to try to auto detect the internal hard drive.
An error message is displayed on the screen during the notebook (boot) sequence.	Power On Self Test (POST) has detected a problem.	See the Power On Self Test (POST) messages to determine the meaning and severity of the problem. Not all messages are errors; some are simply status indicators. *See “Power On Self Test Messages” on page 90.*

Problem	Possible Cause	Possible Solutions
Your notebook appears to change setup parameters when you start it.	BIOS setup changes were not saved when made and you exited the setup utility.	Make sure you select **Save Changes And Exit** when exiting the BIOS setup utility.
	The BIOS CMOS hold-up battery has failed.	Contact your support representative for repairs. This is not a user serviceable part but has a normal life of 3 to 5 years.
Your system display won't turn on when the system is turned on or has resumed.	You have installed the LifeBook/Security Application panel.	Check the Status Indicator Panel for presence of the Security icon. If it is visible, enter your password See "Status Indicator Panel" on page 21.
Video Problems		
The built-in display is blank when you turn on your LifeBook notebook.	The notebook is set for an external monitor only.	Pressing [F10] while holding down the [Fn] key allows you to change your selection of where to send your display video. Each time you press the keys you will step to the next choice. The choices, in order are: built-in display only, external monitor only, both built-in display and external monitor.
	The display angle and brightness settings are not adequate for your lighting conditions.	Move the display and the brightness control until you have adequate visibility. Pressing either the [F6] or [F7] keys while holding down the [Fn] key also allows you to change the brightness level of the display.
	The power management timeouts may be set for very short intervals and you failed to notice the display come on and go off again.	Press a keyboard button or move the mouse to restore operation. If that fails, push the Power/Suspend/Resume button. (The display may be shut off by Standby mode, Auto Suspend or Video Timeout)
The notebook turned on with a series of beeps and the built-in display is blank.	Power On Self Test (POST) has detected a failure which does not allow the display to operate.	Contact your support representative.

Problem	Possible Cause	Possible Solutions
The display goes blank by itself after you have been using it.	The notebook has gone into Video timeout, Standby mode, or Save-to-Disk mode because you have not used it for a period of time.	Press any button on the keyboard, or move the mouse to restore operation. If that fails, push the Power/Suspend/Resume button. Check your power management settings, or close your applications and go to the Power Savings menu of the setup utility to adjust the timeout values to better suit your operation needs. *See "BIOS Setup Utility" on page 42.*
	Power management timeouts may be set for short intervals and you didn't notice the display come on and go off.	Press any button on the keyboard, or move the mouse to restore operation. If that fails, push the Power/Suspend/Resume button. (The display may be shut off by Standby Mode, Auto Suspend or Video Timeout)
Your display won't turn on when the system is turned on or when it has resumed.	The system may be password-protected.	Check the status indicator panel to verify that the Security icon is blinking. If it is blinking, enter your password.
The display does not close.	A foreign object, such as a paper clip, is stuck between the display and keyboard.	Remove all foreign objects from the keyboard.
The display has bright or dark spots.	If the spots are very tiny and few in number, this is normal for a large LCD display.	This is normal; do nothing.
	If the spots are numerous or large enough to interfere with your operation needs.	Display is faulty; contact your support representative.

Problem	Possible Cause	Possible Solutions
The application display uses only a portion of your screen and is surrounded by a dark frame.	You are running an application that does not support the system's native pixel resolution and display compression is enabled.	Display compression gives a clearer but smaller display for applications that do not support the system's native pixel resolution. You can fill the screen but have less resolution by changing display compression settings. These settings can be changed in the Intel GMA control panel.
The Display is dark when on battery power.	The Power Management utility default is set on low brightness to conserve power.	Press [Fn] + [F7] to increase brightness or double-click on the battery gauge and adjust Power Control under battery settings.
You have connected an external monitor and it does not display any information.	Your external monitor is not properly installed.	Reinstall your device. *See "External Video Port" on page 76.*
	Your operating system is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
You have connected an external monitor and it does not come on.	Your external monitor is not compatible with your LifeBook notebook.	See your monitor documentation and the External Monitor Support portions of the Specifications section. See "Specifications" on page 109.
Miscellaneous Problems		
Error message is displayed on the screen during the operation of an application.	Application software often has its own set of error message displays.	See your application manual and help displays screens for more information. Not all messages are errors some may simply be status.

Power On Self Test Messages

The following is an alphabetic list of error-and-status messages that Phoenix BIOS and/or your operating system can generate and an explanation of each message. Error messages are marked with an *. If an error message is displayed that is not in this list, write it down and check your operating system documentation both on screen and in the manual. If you can find no reference to the message and its meaning is not clear, contact your support representative for assistance.

nnnn Memory Cache Passed

Where nnnn is the amount of system cache in kilobytes successfully tested by the Power On Self Test. (This can only appear if you have an SRAM PC Card installed.)

*Extended Memory Failed at address line: xx

Extended memory not working or not configured properly. If you have installed a memory upgrade module, verify that it is properly installed. If it is properly installed, check your Windows Setup to be sure it is not using unavailable memory until you can contact your support representative.

nnnn Extended RAM Passed

Where nnnn is the amount of memory in kilobytes successfully tested.

*Failure Fixed Disk n (where x=1-4)

The fixed disk is not working or not configured properly. This may mean that the hard drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to check for the hard drive type settings and correct them if necessary. If the settings are OK and the message appears when you restart the system, there may be a serious fault which might cause you to lose data if you continue. Contact your support representative.

*Incorrect Drive A type – run SETUP

Type of floppy drive A: not correctly identified in Setup. This means that the floppy disk drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to correct the inconsistency.

***Incorrect Drive B type – run SETUP**

Type of floppy drive B: not correctly identified in Setup. This means that the floppy disk drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to correct the inconsistency.

***Invalid NVRAM Data**

Problem with NVRAM access. In the unlikely case that you see this message you may have some display problems. You can continue operating but should contact your support representative for more information.

***Keyboard controller error**

The keyboard controller test failed. You may have to replace your keyboard or keyboard controller but may be able to use an external keyboard until then. Contact your support representative.

***Keyboard error**

Keyboard not working. You may have to replace your keyboard or keyboard controller but may be able to use an external keyboard until then. Contact your support representative.

***Stuck Key**

BIOS discovered a stuck key and displays the scan code for the stuck key. You may have to replace your keyboard but may be able to use an external keyboard until then. Contact your support representative.

***Monitor type does not match CMOS – Run SETUP**

Monitor type not correctly identified in Setup. This error probably means your BIOS is corrupted, run the setup utility and set all settings to the default conditions. If you still get this error, contact your support representative.

***Operating system not found**

Operating system cannot be located on either drive A: or drive C: Enter the setup utility and see if both the fixed disk, and drive A: are properly identified and that the boot sequence is set correctly. Unless you have changed your installation greatly, the operating system should be on drive C:. If the setup utility is correctly set, your hard drive may be corrupted.

***Parity Check 1 nnnn**

Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. This is a potentially data destroying failure. Contact your support representative.

***Parity Check 2 nnnn**

Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. This is a potentially data-destroying failure. Contact your support representative.

***Press <F1> to resume, <F2> to SETUP**

Displayed after any recoverable error message. Press the [F1] key to continue the boot process or the [F2] key to enter Setup and change any settings.

***Previous boot incomplete – Default configuration used**

Previous Power On Self Test did not complete successfully. The Power On Self Test will load default values and offer to run Setup. If the previous failure was caused by incorrect values and they are not corrected, the next boot will likely fail also. If using the default settings does not allow you to complete a successful boot sequence, you should turn off the power and contact your support representative.

***Real time clock error**

Real-time clock fails BIOS test. May require board repair. Contact your support representative.

***Shadow RAM Failed at offset: nnnn**

Shadow RAM failed at offset nnnn of the 64k block at which the error was detected. You are risking data corruption if you continue. Contact your support representative.

nnnn Shadow RAM Passed

Where nnnn is the amount of shadow RAM in kilobytes successfully tested.

***System battery is dead – Replace and run SETUP**

The BIOS CMOS RAM memory hold up battery is dead. This is part of your BIOS and is a board mounted battery which requires a support representative to change. You can continue operating but you will have to use setup utility default values or reconfigure your setup utility every time you turn off your notebook. This battery has an expected life of 2 to 3 years.

System BIOS shadowed

System BIOS copied to shadow RAM.

***System CMOS checksum bad – Default Configuration Used**

BIOS CMOS RAM has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in BIOS memory. Run Setup and reconfigure the system.

***System RAM Failed at offset: nnnn**

System memory failed at offset nnnn of in the 64k block at which the error was detected. This means that there is a fault in your built-in memory. If you continue to operate, you risk corrupting your data. Contact your support representative for repairs.

nnnn System Memory Passed

Where nnnn is the amount of system memory in kilobytes successfully tested.

***System timer error**

The timer test failed. The main clock that operates the computer is faulty. Requires repair of system board. Contact your support representative for repairs.

Video BIOS shadowed

Video BIOS successfully copied to shadow RAM.

Modem Result Codes

The operating system and application software that is factory installed detects the modem characteristics and provides the necessary command strings to operate the modem. The internal modem operation is controlled by generic AT commands from the operating system and application software. The standard long form result codes may, in some cases, be displayed on your screen to keep you informed of the actions of your modem. The operating system and application software may suppress display of the result codes.

Examples of result codes are:

- OK
- NO CARRIER
- NO DIALTONE
- CONNECT 53000 (Connection complete at 53,000 bps.)
- ERROR
- FAX
- RING (This means an incoming call.)
- BUSY
- NO ANSWER

When using the internal modem with applications that are not factory installed refer to the application documentation.

Restoring Your Pre-installed Software

The Drivers and Applications Restore (DAR) CD contains sets of device drivers and Fujitsu utilities (in specific directories) that are unique to your computer configuration for use as documented below.

IF YOU HAVE ACCESS TO THE INTERNET, VISIT THE FUJITSU SUPPORT WEBSITE AT HTTP://WWW.COMPUTERS.US.FUJITSU.COM/SUPPORT TO CHECK FOR THE MOST CURRENT INFORMATION, DRIVERS AND HINTS ON HOW TO PERFORM RECOVERY AND SYSTEM UPDATES.

Re-installing Individual Drivers and Applications

The Drivers and Applications CD can be used to selectively re-install drivers and/or applications that may have been un-installed or corrupted.

THERE MAY BE CERTAIN FREE THIRD-PARTY APPLICATIONS PRE-INSTALLED ON YOUR SYSTEM THAT ARE NOT ON THE DAR CD. THE LATEST VERSIONS OF THE APPLICATIONS CAN BE DOWNLOADED FROM THE THIRD-PARTY'S WEBSITE.

To re-install drivers and/or applications:

1. Boot up the system and insert the DAR CD after Windows has started. A Fujitsu Installer screen is displayed after the CD is inserted.
2. After reading the License Agreement, click [I agree].
3. A window will appear containing a list of applications, drivers, and utilities that you can install from the Drivers and Applications CD.

THE COMPONENTS LISTED ARE COLOR-CODED IN TERMS OF THEIR INSTALL STATUS. BLUE INDICATES THAT THE COMPONENT CAN BE INSTALLED. GREEN INDICATES THAT THE COMPONENT NEEDS TO BE INSTALLED SEPARATELY. GREY INDICATES A COMPONENT THAT IS ALREADY INSTALLED; GREY ITEMS CAN BE REINSTALLED, BUT PRIOR TO INSTALLATION YOU WILL RECEIVE A REMINDER THAT THE COMPONENT IS ALREADY INSTALLED.

4 In the list, check off all the components you want to install. If you want to install all components, click [Select All]. Clicking [Select All] will select all of the blue-coded components; you must select grey and green components separately.

5 Once you have selected the components you wish to install, click [Install Selected Subsystems]; the components will be installed.

6 After the components are installed, click [OK], then click [Yes] when asked if you want to reboot the system.

Restoring the Operating System for Windows Vista Systems

The Recovery and Utility disc contains four utilities:

- The **Recovery** utility allows you to restore the system operating system (OS). The restored OS is the same one that was originally installed on the hard disk drive. After the OS is restored, you will need to reinstall the drivers and applications from the Drivers and Applications Restore disc and from any application discs that were bundled with the system when you purchased it.
- The **Hard Disk Data Delete** utility on this disc is used to delete all data on your hard disk and prevent it from being reused. Do not use the Hard Disk Data Delete utility unless you are absolutely certain that you want to erase your entire hard disk, including all partitions.
- The **Partition Creation** utility allows you to create a new D: partition or resize existing partitions on your hard disk. **NOTE: Creating or resizing partitions with this utility will cause all data on the hard disk to be completely erased.**
- The **Diagnostics** utility allows the IT professional to determine device status/condition by executing diagnostics tests on selected system components.

Methods for accessing the utilities

Certain LifeBook models have the Recovery and Utility applets pre-installed on a hidden drive. Other systems require that the Recovery and Utility disc be used (or in the event the hard disk has been reformatted).

In order to determine the method for accessing the Recovery and Utility applet, perform the following procedures in order.

Determining whether Recovery and Utility is pre-loaded

1. Turn on or reboot your system. When the Fujitsu logo appears, press [F12] key.
2. From the Boot Menu that appears, check whether the <Recovery and Utility> option is present. If it is not present, it means that the utility must be used from the disc. Proceed to “Running Recovery and Utility from the disc” if <Recovery and Utility> is unavailable.
3. You can also use the TrustedCore menu to determine whether the utility is pre-loaded by powering on your system then pressing the {Enter] key when the Fujitsu logo appears on the screen. The TrustedCore Menu will appear and the Recovery and Utility option will appear in the menu.

Running Recovery and Utility from hard disk

1. Cursor down to <Recovery and Utility> and press the [Enter] key.
2. While the files are being loaded from the disc, a progress bar will appear at the bottom of the screen.
3. When the System Recovery Options dialog opens, select a new keyboard layout, if necessary, then click [Next].
4. When the Operating System dialog appears, click [Next].
5. If necessary, enter your password, then click [OK].
6. When System Recovery Options window appears, click on Recovery and Utility.
7. The Recovery and Utility screen appears on the screen with three tabs: Diagnostics, Recovery and Utility. Please note that Diagnostics tab is not supported on certain LifeBook/Stylistic models when running Recovery and Utility from the hard disk. In order to restore the operating system, please insert the “Recovery and Utility” disc in the CD/DVD drive and use the Start Recovery function under the Recovery tab. For more information about the tabs, go to “Recovery and Utility tabs” on page 98.

Running Recovery and Utility from the disc

- THE USE OF THIS DISC REQUIRES THAT YOU HAVE A DEVICE CAPABLE OF READING CDS ATTACHED TO YOUR SYSTEM. YOU WILL NEED TO ATTACH AN EXTERNAL PLAYER. FOR MORE INFORMATION ON AVAILABLE EXTERNAL DEVICES, VISIT OUR WEB SITE AT: **US.FUJITSU.COM/COMPUTERS**.
- THIS DISC CAN ONLY BE USED WITH THE SYSTEM WITH WHICH IT WAS PURCHASED.

BOOT Priority

Before restoring an image, you must first verify that the system is set up to boot from the optical drive. To verify/change the boot-up priority (rather than booting-up from the hard drive or an external floppy disk drive), perform the following steps:

1. Power on your system. When the Fujitsu logo appears on the screen. press the [Enter] key or click on the left mouse or touchpad button; the TrustedCore Menu will appear.
2. Select the Boot Menu from the TrustedCore Menu.
3. Highlight the CD/DVD option, then click [OK].

Procedure

1. Ensure that you have a device that can read CDs either installed in your system or attached externally to it, and that it has been set up as the Boot device.
2. Turn on the power to your system.
3. Insert the Recovery and Utility Disc into the drive tray.
4. Reboot your system. After the system reboots, the Recovery and Utility screen appears. On the screen are three tabs: Diagnostics, Recovery, and Utility.

Recovery and Utility tabs

Diagnostics tab: The Diagnostics tool is designed for use by IT professionals. It is not likely you will need to use this tool. When you select devices from the Diagnosis window then click [Execute], several tests are performed on the selected components.

Recovery tab: The Recovery tab contains the Start Recovery tool. Note that the recovery process erases all data from the C: drive. If you decide to use the recovery tool, be sure to back up all data that you don't want to lose. Also note that you must run the system using your AC adapter while running the recovery tool. To use the Recovery tool, select the Start Recovery function, click on the [Execute] button, then follow the instructions on the screen.

Utility tab: The Utility tab contains three tools: System Restore, Hard Disk Data Delete and Partition Creation.

- **System Restore** can help fix problems that might be making your computer run slowly or stop responding. System Restore enables you in rolling back the system to an earlier restore point, and does not affect any of your documents, pictures, or other personal data.
- The **Hard Disk Data Delete** utility is used to delete all data on the hard disk and prevent the data from being reused. **NOTE: Do not use the Hard Disk Data Delete utility unless you are absolutely certain that you want to erase your entire hard disk, including all partitions**.
- The **Partition Creation** utility allows you to create a D: partition or resize existing partitions on your hard disk. **NOTE: Creating or resizing partitions with this utility will cause all data on the hard disk to be completely erased.**

Automatically Downloading Driver Updates

Your system has a convenient tool called the Fujitsu Driver Update (FDU) utility. With FDU, you can choose to automatically or manually go to the Fujitsu site to check for new updates for your system.

The FDU icon should appear in the system tray at the bottom right of your screen (roll the cursor over the icons to find the correct one). If the icon does not appear in the system tray, go to [Start] -> All Programs, and click on Fujitsu Driver Update; this will create the icon automatically.

To invoke the FDU menu, you can either right-click on the FDU icon or hold the pen on the icon for a couple of seconds until the menu appears. The menu contains the following items:

Check for updates now

Allows for manual driver update search. The first time it is used, you are prompted to agree to a user agreement. After clicking on the icon, the FDU automatically connects with the Fujitsu site to check for updates and downloads them. While downloading, the icon has a red bar through it, indicating that it cannot be used while the download is in process. When the update is complete, a message appears informing you of the fact.

Enable Automatic Update Notifications

Automatically searches for new updates on a regular basis (approximately every 3 days).

Show update history

Brings up a screen that displays a history of updates that have been made via the FDU.

About Fujitsu Driver Update

Displays the FDU version number and copyright information

Fujitsu Driver Update Readme

Displays the FDU readme.

Chapter 5

Care and Maintenance

Caring for your LifeBook Notebook

If you use your Fujitsu LifeBook notebook carefully, you will increase its life and reliability. This section provides some tips for looking after the notebook and its devices.

- The system contains components that can be severely damaged by electrostatic discharge (ESD). To minimize risk to the components, observe the following precautions:
  - Before docking or undocking your LifeBook notebook (when using a port replicator), it is a good practice to always touch a grounded metal object to discharge static electricity built up in your body.
  - Be sure to power down your system before adding or removing system components. Even if the system is in hibernate or standby states, data could be lost or memory could be damaged if power is still available to the system.
  - When installing or removing a memory module, hold it by the edge so as not to touch any contacts or chips. Be careful not to touch any internal computer terminals or components; the oil from your fingers could cause a short to the components.
- Electrical equipment may be hazardous if misused. Operations of this product or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical products and do not permit them to handle any cables.

- Your LifeBook notebook is a durable but sensitive electronic device. Treat it with respect and care.
- Make a habit of transporting it in a suitable carrying case.
- Do not attempt to service the computer yourself. Always follow installation instructions closely.
- Keep it away from food and beverages.
- To protect your notebook from damage and to optimize system performance, be sure to **keep all air vents unobstructed**, **clean, and clear of debris**. This may require periodic cleaning, depending upon the environment in which the system is used.
- Do not operate the notebook in areas where the air vents can be obstructed, such as in tight enclosures or on soft surfaces like a bed or cushion.
- If you accidentally spill liquid on your LifeBook notebook:
  1. Turn it off.
  2. Position it so that the liquid can run out.
  3. Let it dry out for 24 hours, or longer if needed.
  4. If your notebook will not boot after it has dried out, call your support representative.
- Do not use your Fujitsu LifeBook notebook in a wet environment (near a bathtub, swimming pool).
- Always use the AC adapter and batteries that are approved for your notebook.
- Avoid exposure to sand, dust and other environmental hazards.
- Do not expose your notebook to direct sunlight for long periods of time as temperatures above 140° F (60° C) may damage your notebook.
- Keep the covers closed on the connectors and slots when they are not in use.
- Do not put heavy or sharp objects on the computer.
- If you are carrying your LifeBook notebook in a briefcase, or any other carrying case, make sure that there are no objects in the case pressing on the lid.
- Never position your notebook such that the optical drive is supporting the weight of the notebook.

Cleaning your LifeBook notebook

- Always disconnect the power plug. (Pull the plug, not the cord.)
- Clean your LifeBook notebook with a damp, lint-free cloth. Do not use abrasives or solvents.
- Use a soft cloth to remove dust from the screen. Never use glass cleaners.
- Always shut down the computer, unplug the power adapter, and remove the battery when cleaning or disinfecting the computer exterior, keyboard or LCD display.

NOTE: Avoid wetting the thermal suede in all cases.

Cleaning guidelines using recommended off-the-shelf cleaners

Computer exterior, computer keyboard

To clean the exterior and keyboard, use one of the following off-the-shelf products:

- Office Depot® #154-616 Notebook Cleaning Kit
- Meridrew Enterprises Klear_Screen® Wipes
- 3M CL563 Cleaner Wipes

Note: After cleaning with one of these products, gently polish with a dry, soft, lint-free cloth until the solution is no longer visible.

LCD display

To clean the LCD display, use one of the following off-the-shelf products:

- Office Depot® #154-616 Notebook Cleaning Kit
- Meridrew Enterprises Klear_Screen® Wipes

* Applies to Tablet PC, convertible PC with LCD shield, and standard notebook LCD displays.

Wipe the LCD surface gently, allowing it to dry before turning on the computer.

Disinfecting LifeBook computers

- Wipe the surface with a soft cloth wipe and a 50% ethanol solution or use another ethanol-based germicide which has been registered as a hospital disinfectant by the EPA.

- USE OF INCORRECT CLEANERS CAN RESULT IN OPTICAL IMPAIRMENT OF THE LCD AND/OR DAMAGE TO THE COMPUTER. ALWAYS REFER TO THE CLEANER MANUFACTURER'S GUIDELINES AND MATERIAL SAFETY DATA SHEETS FOR PROPER HANDLING AND USE OF THE PRODUCTS.
- NEVER USE AMMONIA, ACIDIC, OR ALKALINE CLEANERS OR ORGANIC CHEMICALS SUCH AS PAINT THINNER, ACETONE, PROPYL OR ISOPROPYL ALCOHOL, OR KEROSENE. IT MAY DAMAGE SURFACE FINISHES AND THE COATING OF THE LCD SCREEN.
- NEVER USE COMPRESSED AIR FOR CLEANING STYLISTIC AND LIFEBOOK PCS.

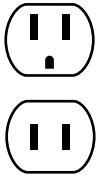
Storing your LifeBook notebook

- If storing your notebook for a month or longer, turn your LifeBook notebook off, fully charge the battery, then remove and store all Lithium ion batteries.
- Store your notebook and batteries separately. If you store your LifeBook with a battery installed, the battery will discharge, and battery life will be reduced. In addition, a faulty battery might damage your LifeBook.
- Store your Fujitsu LifeBook in a cool, dry location. Temperatures should remain between 13ºF (-25ºC) and 140ºF (60ºC).

- ALWAYS POWER OFF THE COMPUTER BEFORE TRANSPORTING AND/OR PACKAGING IT. AFTER SHUTTING DOWN THE SYSTEM, WAIT UNTIL THE STATUS LED PANEL INDICATES POWER OFF CONDITION (I.E., NO LIGHTS ARE ILLUMINATED).
- IT IS POSSIBLE THAT THE UNIT MAY NOT AUTOMATICALLY GO TO POWER OFF OR HIBERNATE MODE WHEN YOU CLOSE THE LID. THIS SITUATION MAY OCCUR DUE TO PRE-OS BOOT PASSWORD SECURITY SETTINGS OR SOME OTHER APPLICATION RUNNING ON THE COMPUTER.
- ATTEMPTING TO TRANSPORT THE COMPUTER WHILE POWER IS ON MAY DAMAGE THE NOTEBOOK DUE TO SHOCK OR OVERHEATING SINCE THE AIR VENTS MAY BE BLOCKED OR RESTRICTED.

Traveling with your LifeBook notebook

- Do not transport your notebook while it is turned on.
- It is recommended that you carry your notebook with you while traveling, rather than checking it in as baggage.
- Always bring your System Recovery CD that came with your notebook when you travel. If you experience system software problems while traveling, you may need it to correct any problems.
- Never put your notebook through a metal detector. Have your notebook hand-inspected by security personnel. You can however, put your notebook through a properly tuned X-ray machine. To avoid problems, place your notebook close to the entrance of the machine and remove it as soon as possible or have your notebook hand-inspected by security personnel. Security officials may require you to turn your notebook on, so make sure you have a charged battery on hand.
- Take the necessary plug adapters if you're traveling overseas. Check the following diagram to determine which plug adapter you'll need or ask your travel agent.

Outlet Type	Location	Outlet Type	Location
	United States, Canada, parts of Latin America, Mexico, Japan, Korea, the Philippines, Taiwan		United Kingdom, Ireland, Malaysia, Singapore, parts of Africa
	Russia and the Commonwealth of Independent States (CIS), most of Europe, parts of Latin America, the Middle East, parts of Africa, Hong Kong, India, most of South Asia		China, Australia, New Zealand

Batteries

Caring for your Batteries

- Always handle batteries carefully.
- Do not short-circuit the battery terminals (that is, do not touch both terminals with a metal object). Do not carry lose batteries in a pocket or purse where they may mix with coins, keys, or other metal objects. Doing so may cause an explosion or fire.
- Do not drop, puncture, disassemble, mutilate or incinerate the battery.
- Recharge batteries only as described in this manual and only in ventilated areas.
- Do not leave batteries in hot locations for more than a day or two. Intense heat can shorten the life of your battery.
- Do not leave a battery in storage for longer than 6 months without recharging it.

Increasing Battery Life

- Power your LifeBook notebook through the AC or optional auto/airline adapter whenever possible.
- If your notebook is running on battery power all day, connect it to the AC adapter overnight to recharge the battery.
- Keep brightness to the lowest level comfortable.
- Set the power management for maximum battery life.
- Put your notebook in Standby mode when it is turned on and you are not actually using it.
- Limit your media drive access.
- Disable the Media Player auto insert notification function.
- Always use fully charged batteries.
- Eject ExpressCards when not in use.

Media Care

Caring for your Media (DVD/CD/CD-R)

Media discs are precision devices and will function reliably if given reasonable care.

- Always store your media disc in its case when it is not in use.
- Always handle discs by the edges and avoid touching the surface.
- Avoid storing any media discs in extreme temperatures.
- Do not bend media discs or set heavy objects on them.
- Do not spill liquids on media discs.
- Do not scratch media discs.
- Do not get dust on media discs.
- Never write on the label surface with a ballpoint pen or pencil. Always use a felt pen.
- If a media disc is subjected to a sudden change in temperature, cold to warm condensation may form on the surface. Wipe the moisture off with a clean, soft, lint free cloth and let it dry at room temperature. DO NOT use a hair dryer or heater to dry media discs.
- If a disc is dirty, use only a DVD/CD cleaner or wipe it with a clean, soft, lint free cloth starting from the inner edge and wiping to the outer edge.

Caring for your Optical Drive

Your optical drive is durable but you must treat it with care. Please pay attention to the following points:

- The drive rotates the compact disc at a very high speed. Do not carry it around or subject it to shock or vibration with the power on.
- Avoid using or storing the drive where it will be exposed to extreme temperatures.
- Avoid using or storing the drive where it is damp or dusty.

- Avoid using or storing the drive near magnets or devices that generate strong magnetic fields.
- Avoid using or storing the drive where it will be subjected to shock or vibration.
- Do not disassemble or dismantle the optical drive.
- Use of a commercially available lens cleaner is recommended for regular maintenance of your drive.

ExpressCards

Caring for your Cards

ExpressCards are durable, but you must treat them with care. The documentation supplied with your card will provide specific information, but you should pay attention to the following points:

- To keep out dust and dirt, store cards in their protective sleeves when they are not installed in your LifeBook notebook.
- Avoid prolonged exposure to direct sunlight or excessive heat.
- Keep the cards dry.
- Do not flex or bend the cards, and do not place heavy objects on top of them.
- Do not force cards into the slot.
- Avoid dropping cards, or subjecting them to excessive vibration.

Chapter 6

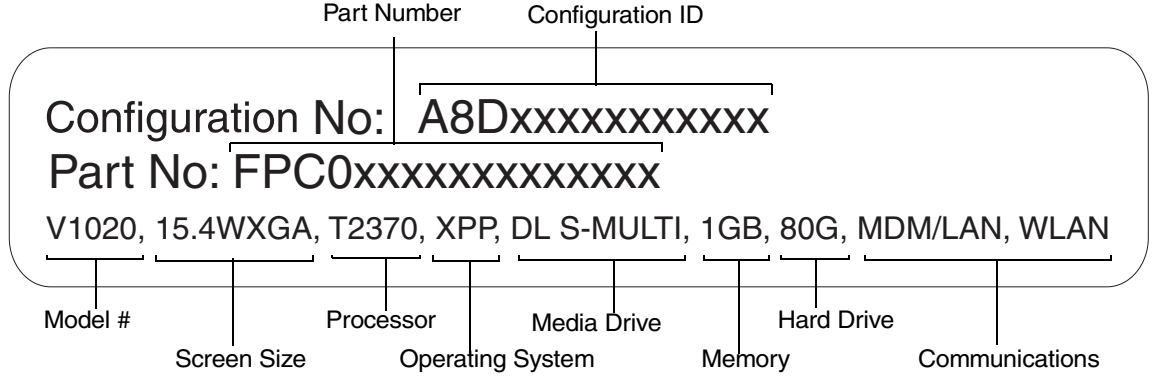
System Specifications

Specifications

This section provides the hardware and environmental specifications for your Fujitsu LifeBook notebook. Specifications of particular configurations will vary.

Configuration Label

The configuration label located on the bottom of your notebook contains specific information regarding the options you've chosen for your notebook. Following is an example configuration label.



Microprocessor

Intel® Pentium® Dual Core processor (Refer to the system label to determine the speed of your processor).

Chipset

- Intel GM965
- I/O Controller Hub 8 Mobile (ICH8-M)

Memory

System Memory

- DDR2-533 MHz SDRAM dual-channel memory module
- Two DIMM slots; upgradeable to 4 GB of total memory (2 GB x 2). Note that when 4 MB of memory is installed in a Windows Vista system, approximately 3 GB is addressable memory; the upper memory is reserved by Vista for hardware usage.

Cache Memory

1 MB or 2 MB L2 cache on-die (depending upon system processor)

Video

Built-in color flat-panel TFT active matrix LCD display with simultaneous display capability.

Video Color and Resolution

15.4" Crystal View Wide XGA:

- Internal: 1280 x 800 pixel resolution, 16M colors
- External: 1600 x 1200 pixel resolution, 16M colors
- Simultaneous: 1280 x 768, 16M colors

Video RAM

Intel® Graphics Media Accelerator X3100 video graphics. Up to 384 MB shared video memory using Dynamic Video Memory Technology (DVMT)

Audio

- Realtek codec ALC268 with 2-channel High Definition (HD) audio.
- **Headphones:** Stereo headphone jack, 3.5 mm, 1 V_{rms} or less, minimum impedance 32 Ohms
- **Microphone:** Stereo microphone jack, 3.5 mm, 100 mV_{p-p} or less, minimum impedance 10K Ohms
- Two built-in boxless stereo speakers

Mass Storage Device Options

Hard Drive

Serial ATA, 150 Mbps data buffer, 5400 rpm, 2.5”, 9.5 mm. The hard drive capacity is dependent upon the system configuration.

Media Player

Dual-Layer Multi-Format DVD Writer: 24x CD-ROM, 24x CD-R, 10x CD-RW, 8x DVD-ROM, 5x DVD-RAM, 8x DVD-R, 4x DVD-R (DL), 6x DVD-RW, 8x DVD-R, 4x DVD-R (DL), 8x DVD-RW

Features

Integrated Pointing Device

Touchpad pointing device

Communications

- **Modem**: Internal V.90 standard 56K fax/modem (ITU V.90, 56K data, 14.4K fax)
- **LAN**: Internal wired 10/100 Ethernet LAN

Wireless LAN:

Optional integrated Atheros SuperAG Wireless LAN (802.11a+b/g)

Theft Prevention Lock

Lock slot for use with security restraint systems.

Device Ports

On the LifeBook notebook:

- ExpressCard slot for one ExpressCard
- SD Card slot for one SD Card
- One 15-pin D-SUB connector for VGA external monitor (see Display specifications)
- Three USB 2.0 (Universal Serial Bus) connectors for input/output devices
- One DC In connector
- One modular modem (RJ-11) connector
- One LAN (RJ-45) connector
- One stereo headphone jack
- One stereo microphone jack

Keyboard

Built-in keyboard with all functions of 101 key PS/2 compatible keyboards.

- Total number of keys: 86
- Function keys: [F1] through [F12]
- Feature extension key: Fn
- Two Windows keys: one Start key, one Application key
- Key pitch: 19 mm

- Key stroke: 2.7 mm
- Built-in Touchpad pointing device with left and right buttons.
- Spill-resistant keyboard
- Built-in Palm Rest
- USB-compatible keyboard and/or mouse support

Power

Battery

Standard Lithium ion battery, rechargeable, 6-cell 10.8V, 4000 mAh, 40.6 Wh

AC Adapter

Autosensing 100-240V AC, supplying 19V DC, 4.22A, 80W to the LifeBook notebook; includes an AC cable

Power Management

Conforms to ACPI (Advanced Configuration and Power Interface).

Dimensions and Weight

Overall Dimensions

Approximately 14.17"(w) x 10.43"(d) x 1.50”/1.59”(h) (360 mm x 265 mm x 38mm/40.5 mm)

Weight

Approximately 6.3 lbs. (2.86 kg) with battery and optical drive

Environmental Requirements

Temperature

Operating: 41° to 95° F (5° to 35° C)
Non-operating: 5° to 140° F (–15° to 60° C)

Humidity

Operating: 20% to 85%, relative, non-condensing
Non-operating; 8% to 85%, relative, non-condensing

Popular Accessories

For ordering or additional information on Fujitsu accessories please visit our Web site at www.shopfujitsu.com or call 1-800-FUJITSU.

Pre-Installed Software

Depending on your pre-installed operating system, your notebook comes with pre-installed software for playing audio and video files of various formats. In addition there is file transfer software, virus protection software and Power Management software. The following list indicates the pre-installed software on your system.

- Adobe Acrobat Reader
- Norton Internet Security™ 2007 (90-day free trial)
- Roxio Easy Media Creator
- CyberLink PowerDVD
- LifeBook Application Panel
- Google Desktop
- Google Tool Bar
- Google Picasa

- Fujitsu Driver Update utility
- Evernote
- Microsoft OfficeReady with Office Assistant (60-day free trial)

Learning About Your Software

Tutorials

All operating systems and most application software have tutorials built into them upon installation. We highly recommend that you step through the tutorial before you use an application.

Manuals

Included with your notebook you will find manuals for your installed operating system and other pre-installed software. Any manuals that are not included, are available online through the help system of the software. We recommend that you review these manuals for information on the use of these applications.

Adobe Acrobat Reader

The Adobe Acrobat Reader allows you to view, navigate, and print PDF files from across all of the major computing platforms.

Norton Internet Security 2007

Your system includes a free 90-day trial version of Symantec's Norton Internet Security™ 2007. Norton Internet Security is a suite of tools designed to protect your LifeBook notebook from computer viruses, hackers, spyware, and spam. It assists in the protection of data currently on your hard disk from destruction or contamination. The trial version is activated upon your acceptance of software license agreement. After 90 days, you will need to purchase a subscription from Symantec to download latest virus, spyware, and spam definitions.

Roxio Easy Media Creator

Easy Media Creator allows you to easily burn CDs and organize, edit and share digital photos, music, data, and videos.

CyberLink PowerDVD

CyberLink PowerDVD allows you to produce and edit home movies and slideshows on discs.

LifeBook Application Panel Software

Your notebook is pre-installed with software utilities that let you operate and configure your LifeBook Application Panel. These utilities are found under the Start menu, under Programs, then under LifeBook Application Panel.

Google Desktop

Google Desktop lets you to search the contents of your computer for emails, web history, and files. It also allows you to view news and photos from anywhere on your desktop.

Google Picasa

Google Picasa lets you to search for, locate, move and label all of the photos on your computer.

Google Toolbar

Google Toolbar lets you to search the Internet quickly, block pop-ups, and perform a variety of other tasks to make your Internet experience easier and more pleasant.

Fujitsu Driver Update Utility

The Fujitsu Driver Update (FDU) utility is pre-installed on your system. With FDU, you can choose to automatically or manually go to the Fujitsu site to check for new updates for your system. See “Automatically Downloading Driver Updates” on page 100.

EverNote

EverNote allows you to easily capture, store and access a variety of documents, such as typed and handwritten memos, webpage excerpts, emails, phone messages, addresses, passwords, sketches, and documents.

Microsoft® Office Ready with Office Assistant

With Office Ready PCs it's now even easier to take advantage of Microsoft Office 2007. The full versions of Microsoft Office Basic, Small Business and Professional 2007 are already preinstalled on your PC, so there's nothing to install, and all Office Ready PCs give you the option to activate a 60 day trial of Microsoft Office Professional 2007! All you need to do is purchase the appropriate Office 2007 license kit which allows you to "unlock" the full version of Office that you want.

Fujitsu offers a Media License Kit for Microsoft Office Small Business 2007. Simply enter your product key and you're ready to go!

Another option is to purchase a Microsoft Office 2007 media-less license kit (MLK) from either your computer reseller or online from Microsoft within 90 days of the purchase of your computer.

Glossary

AC Adapter

A device which converts the AC voltage from a wall outlet to the DC voltage needed to power your LifeBook notebook.

Access point

Wireless network device used to bridge wireless and wired network traffic.

ACPI

Advanced Configuration and Power Interface

Active-Matrix Display

A type of technology for making flat-panel displays which has a transistor or similar device for every pixel on the screen.

Ad Hoc Mode

Ad Hoc Mode refers to a wireless network architecture where wireless network connectivity between multiple computers is established without a central wireless network device, typically known as Access Points. Connectivity is accomplished using only client devices in a peer-to-peer fashion. For details, refer to on “Ad Hoc Mode” on page 143

ADSL

Asymmetric Digital Subscriber Line. Technology for transporting high bit-rate services over ordinary phone lines.

AGP

Accelerated Graphics Port. Graphics port specifically designed for graphics-intensive devices, such as video cards and 3D accelerators.

Auto/Airline Adapter

A device which converts the DC voltage from an automobile cigarette lighter or aircraft DC power outlet to the DC voltage needed to power your LifeBook notebook.

BIOS

Basic Input-Output System. A program and set of default parameters stored in ROM which tests and operates your LifeBook notebook when you turn it on until it loads your installed operating system from disk. Information from the BIOS is transferred to the installed operating system to provide it with information on the configuration and status of the hardware.

Bit

An abbreviation for binary digit. A single piece of information which is either a one (1) or a zero (0).

bps

An abbreviation for bits per second. Used to describe data transfer rates.

Boot

To start-up a computer and load its operating system from disk, ROM or other storage media into RAM.

Bus

An electrical circuit which passes data between the CPU and the sub-assemblies inside your LifeBook notebook.

Byte

8 bits of parallel binary information.

Cache Memory

A block of memory built into the micro-processor which is much faster to access than your system RAM and used in specially structured ways to make your overall data handling time faster.

CardBus

A faster, 32-bit version of the PC Card interface which offers performance similar to the 32-bit PCI architecture.

CD-ROM

Compact disk read only memory. This is a form of digital data storage which is read optically with a laser rather than a magnetic head. A typical CD-ROM can contain about 600MB of data and is not subject to heads crashing into the surface and destroying the data when there is a failure nor to wear from reading.

Channel

Range of narrow-band frequencies used by the WLAN device to transmit data. IEEE802.11b/g - 11 channels, 22 MHz wide channels.

CMOS RAM

Complementary metal oxide semiconductor random access memory. This is a technology for manufacturing random access memory which requires very low levels of power to operate.

COM Port

Abbreviation for communication port. This is your serial interface connection.

Command

An instruction which you give your operating system. Example: run a particular application or format a floppy disk.

Configuration

The combination of hardware and software that makes up your system and how it is allocated for use.

CRT

Cathode Ray Tube. A display device which uses a beam of electronic particles striking a luminescent screen. It produces a visual image by varying the position and intensity of the beam.

Data

The information a system stores and processes.

DC

Direct current. A voltage or current that does not fluctuate periodically with time.

Default Value

A pre-programmed value to be used if you fail to set your own.

DHCP

Dynamic Host Configuration Protocol. A protocol used to automatically acquire parameters required for the communication, such as IP address. The sender of IP address is called a DHCP server, and the receiver is called a DHCP client.

DIMM

Dual-in-line memory module.

Disk

A spinning platter of magnetic data storage media. If the platter is very stiff it is a hard drive, if it is highly flexible it is a floppy disk, if it is a floppy disk in a hard housing with a shutter it is commonly called a diskette.

Disk Drive

The hardware which spins the disk and has the heads and control circuitry for reading and writing the data on the disk.

Diskette

A floppy disk in a hard housing with a shutter.

DMA

Direct Memory Access. Special circuitry for memory to memory transfers of data which do not require CPU action.

DMI

Desktop Management Interface. A standard that provides PC management applications with a common method of locally or remotely querying and configuring PC computer systems, hardware and software components, and peripherals.

DNS

Domain Name System. A function to control the association between the IP address and the name assigned to the computer. If you do not know the IP address but if you know the computer name, you can still communicate to that computer.

DOS

Disk Operating System (MS-DOS is a Microsoft Disk Operating System).

Driver

A computer program which converts application and operating system commands to external devices into the exact form required by a specific brand and model of device in order to produce the desired results from that particular equipment.

DVMT

Dynamic Video Memory Technology. A video memory architecture that increases the efficiency of the motherboard by using innovative memory utilization and direct AGP.

ECP

Extended Capability Port. A set of standards for high speed data communication and interconnection between electronic devices.

Encryption Key (Network Key)

Data encryption key used to encrypt message text and for computing message integrity checks. Data encryption protects data from unauthorized viewing.

This device uses the same encryption key to encode and decode the data, and the identical encryption key is required between the sender and receiver.

ESD

Electro-Static Discharge. The sudden discharge of electricity from a static charge which has built-up slowly. Example: the shock you get from a doorknob on a dry day or the sparks you get from brushing hair on a dry day.

FCC

Federal Communication Commission.

Floppy Disk

A spinning platter of magnetic data storage media which is highly flexible.

GB

Gigabyte. One billion bytes.

Hard drive

A spinning platter of magnetic data storage media where the platter is very stiff.

I/O

Input/Output. Data entering and leaving your notebook in electronic form.

I/O Port

The connector and associated control circuits for data entering and leaving your notebook in electronic form.

IDE

Intelligent Drive Electronics. A type of control interface for a hard drive which is inside the hard drive unit.

IEEE802.11a

Wireless LAN standard that supports a maximum data rate of 54 Mbps. 802.11a devices operate in the 5 GHz lower and middle UNII bands.

IEEE802.11b

Wireless LAN standard that supports a maximum data rate of 11 Mbps. 802.11b devices operate in the 2.4 GHz ISM band.

IEEE802.11g

Wireless LAN standard that supports a maximum data rate of 54 Mbps. 802.11g devices operate in the 2.4 GHz ISM band.

Infrared

Light just beyond the red portion of the visible light spectrum which is invisible to humans.

Infrastructure

A name of a wireless LAN configuration. This type of communication uses an access point. Another type of communication is called Ad Hoc.

IP Address

An identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

Within an isolated network, you can assign IP addresses at random as long as each one is unique. However, connecting a private network to the Internet requires using registered IP addresses (called Internet addresses) to avoid duplicates.

The four numbers in an IP address are used in different ways to identify a particular network and a host on that network. Three regional Internet registries -- ARIN, RIPE NCC and APNIC -- assign Internet addresses from the following three classes.

Class A - supports 16 million hosts on each of 126 networks

Class B - supports 65,000 hosts on each of 16,000 networks

Class C - supports 254 hosts on each of 2 million networks

The number of unassigned Internet addresses is running out, so a new classless scheme called CIDR is gradually replacing the system based on classes A, B, and C and is tied to adoption of IPv6.

IR

An abbreviation for infrared.

IrDA

Infrared Data Association. An organization which produces standards for communication using infrared as the carrier.

IRQ

Interrupt Request. An acronym for the hardware signal to the CPU that an external event has occurred which needs to be processed.

KB

Kilobyte. One thousand bytes.

LAN

Local Area Network. An interconnection of computers and peripherals within a single limited geographic location which can pass programs and data amongst themselves.

LCD

Liquid Crystal Display. A type of display which makes images by controlling the orientation of crystals in a crystalline liquid.

Lithium ion Battery

A type of rechargeable battery which has a high power-time life for its size and is not subject to the memory effect as Nickel Cadmium batteries.

LPT Port

Line Printer Port. A way of referring to parallel interface ports because historically line printers were the first and latter the most common device connected to parallel ports.

MAC Address

Media Access Control Address. A unique physical address of a network card. For Ethernet, the first three bytes are used as the vendor code, controlled and assigned by IEEE. The remaining three bytes are controlled by each vendor (preventing overlap), therefore, every Ethernet card is given a unique physical address in the world, being assigned with a different address from other cards. For Ethernet, frames are sent and received based on this address.

MB

Megabyte. One million bytes.

Megahertz

1,000,000 cycles per second.

Memory

A repository for data and applications which is readily accessible to your LifeBook notebook's CPU.

MHz

Megahertz.

MIDI

Musical Instrument Digital Interface. A standard communication protocol for exchange of information between computers and sound producers such as synthesizers.

Modem

A contraction for MOdulator-DEModulator. The equipment which connects a computer or other data terminal to a communication line.

Monaural

A system using one channel to process sound from all sources.

MTU

Maximum Transmission Unit

The maximum data size that can be transferred at a time through the Internet or other networks. You can set a smaller MTU size to obtain successful communication, if you have difficulty transferring data due to the fact that the maximum size is too large.

Network key

Data that is used for encrypting data in data communication. The personal computer uses the same network key both for data encryption and decryption, therefore, it is necessary to set the same network key as the other side of communication.

Network name (SSID: Service Set Identifier)

When a wireless LAN network is configured, grouping is performed to avoid interference or data theft. This grouping is performed with “Network name (SSID)”. In order to improve security, the network key is set allowing no communication unless “Network name (SSID)” coincides with the network key.

NTSC

National TV Standards Commission. The standard for TV broadcast and reception for the USA.

Open system authentication

Null authentication method specified in the 802.11 standard that performs no authentication checks on a wireless client before allowing it to associate.

Operating System

A group of control programs that convert application commands, including driver programs, into the exact form required by a specific brand and model of microprocessor in order to produce the desired results from that particular equipment.

Partition

A block of space on a hard drive which is set aside and made to appear to the operating system as if it were a separate disk, and addressed by the operating system accordingly.

PCMCIA

PCMCIA is a trademark of the Personal Computer Memory Card International Association. The Personal Computer Memory Card International Association is an organization that sets standards for add-in cards for personal computers.

Peripheral Device

A piece of equipment which performs a specific function associated with but not integral to a computer. Examples: a printer, a modem, a CD-ROM.

Pitch (keyboard)

The distance between the centers of the letter keys of a keyboard.

Pixel

The smallest element of a display, a dot of color on your display screen. The more pixels per area the clearer your image will appear.

POST

Power On Self Test. A program which is part of the BIOS which checks the configuration and operating condition of your hardware whenever power is applied to your notebook. Status and error messages may be displayed before the operating system is loaded. If the self test detects failures that are so serious that operation can not continue, the operating system will not be loaded.

PPPoE

Point to Point Protocol over Ethernet. A protocol for Ethernet, using a Point-to-Point Protocol (PPP), which is used for connection on the phone line.

Program

An integrated set of coded commands to your computers telling your hardware what to do and how and when to do it.

Protocol

Procedures and rules use to send and receive data between computers.

- Method of sending and receiving data

- Process used to handle communication errors

Conditions required for communication are organized in procedures for correct transfer of information.

RAM

Random Access Memory. A hardware component of your LifeBook notebook that holds binary information (both program and data) as long as it has the proper power applied to it.

RAM Module

A printed circuit card with memory and associated circuitry which allows the user to add additional memory to the computer without special tools.

Reset

The act of reloading the operating system. A reset erases all information stored in RAM.

Restart

See Reset.

Resume

To proceed after interruption. In your notebook this refers to returning to active operation after having been in one of the suspension states.

ROM

Read Only Memory. A form of memory in which information is stored by physically altering the material. Data stored in this way can not be changed by your notebook and does not require power to maintain it.

SDRAM

Synchronous Dynamic Random Access Memory.

Serial Port

A connection to another device through which data is transferred one bit at a time on a single wire with any other wires only for control of the device not for transfer of data.

Shared key authentication

802.11 network authentication method in which the AP sends the client device a challenge text packet that the client must then encrypt with the correct WEP key and return to the AP. If the client has the wrong key or no key, authentication will fail and the client will not be allowed to associate with the AP. Shared key authentication is not considered secure, because a hacker who detects both the clear-text challenge and the same challenge encrypted with a WEP key can decipher the key.

SSID

Service Set Identifier, a 32-character unique identifier attached to the header of packets sent over a WLAN that acts as a password when a mobile device tries to connect to the BSS. The SSID differentiates one WLAN from another, so all access points and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID. Because the SSID is broadcast in plain text, it does not supply any security to the network.

Standby

To make inoperative for a period of time. Your LifeBook notebook uses various suspension states to reduce power consumption and prolong the charge of your battery.

Status Indicator

A display which reports the condition of some portion of your hardware. On your LifeBook notebook this is an LCD screen just above the keyboard.

Stereo (audio)

A system using two channels to process sound from two different sources.

Subnet mask

TCP-IP network is controlled by being divided into multiple smaller networks (subnets). IP address consists of the subnet address and the address of each computer. Subnet mask defines how many bits of IP address comprise the subnet address. The same value shall be set among computers communicating with each other.

SVGA

Super VGA.

S-Video

Super Video. A component video system for driving a TV or computer monitor.

System Clock

An oscillator of fixed precise frequency which synchronizes the operation of the system and is counted to provide time of day and date.

TCP/IP

Transmission Control Protocol/Internet Protocol. A standard Internet protocol that is most widely used.

TFT

Thin Film Transistor – A technology for flat display panels which uses a thin film matrix of transistors to control each pixel of the display screen individually.

UL

Underwriters Laboratories – An independent organization that tests and certifies the electrical safety of devices.

USB

Universal Serial Bus. Standard that allows you to simultaneously connect up to 127 USB devices such as game pads, pointing devices, printers, and keyboards to your computer.

VRAM

Video Random Access Memory. A memory dedicated to video display data and control.

WFM

Wired for Management is Intel's broad-based initiative to reduce the total cost of ownership (TCO) of business computing without sacrificing power and flexibility.

Wi-Fi Compatible

Wi-Fi (Wireless Fidelity) Identifies that the product has passed the interoperability test, supplied by the WECA (Wireless Ethernet Compatibility Alliance), which guarantees the interoperability of wireless IEEE 802.11 LAN products. For more information on the Wi-Fi standard, go to the WECA Web site at: www.wirelessethernet.com.

WLAN

Wireless Local Area Network. A wireless interconnection of computers and peripherals within a single limited geographic location which can pass programs and data amongst themselves.

Regulatory Information

Notice

Changes or modifications not expressly approved by Fujitsu could void this user's authority to operate the equipment.

FCC NOTICES

Notice to Users of Radios and Television

This equipment has been tested and found to comply with the limit for class B digital devices, pursuant to parts 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet that is on a different circuit than the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device.

Notice to Users of the US Telephone Network

This equipment complies with Part 68 of the FCC rules, and the requirements adopted by ACTA. On the bottom of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment; or a product identifier in the format US:AAAEQ##TXXXX. If requested, this information or number must be provided to the telephone company.

This equipment is designed to be connected to the telephone network or premises wiring using a standard jack type USOC RJ11C. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant.

The ringer equivalent number (REN) of this equipment is 0.1B as shown on the label. The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could effect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please refer to the manual or contact Fujitsu Computer Systems Corporation, Customer Service. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

The equipment cannot be used on public coin service provided by the telephone company. Connection to party line service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information).

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this computer does not disable your alarm equipment. If you have any questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date an time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

DOC (INDUSTRY CANADA) NOTICES

Notice to Users of Radios and Television

This Class B digital apparatus meets all requirements of Canadian Interference-Causing Equipment Regulations.

CET appareil numérique de la class B respecte toutes les exigence du Réglement sur le matérial brouilleur du Canada.

Notice to Users of the Canadian Telephone Network

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Before connecting this equipment to a telephone line the user should ensure that it is permissible to connect this equipment to the local telecommunication facilities. The user should be aware that compliance with the certification standards does not prevent service degradation in some situations.

Repairs to telecommunication equipment should be made by a Canadian authorized maintenance facility. Any repairs or alterations not expressly approved by Fujitsu or any equipment failures may give the telecommunication company cause to request the user to disconnect the equipment from the telephone line.

NOTICE: The Ringer Equivalence Number (REN) for this terminal equipment is 0.1B. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

FOR SAFETY, USERS SHOULD ENSURE THAT THE ELECTRICAL GROUND OF THE POWER UTILITY, THE TELEPHONE LINES AND THE METALLIC WATER PIPES ARE CONNECTED TOGETHER. USERS SHOULD NOT ATTEMPT TO MAKE SUCH CONNECTIONS THEMSELVES BUT SHOULD CONTACT THE APPROPRIATE ELECTRIC INSPECTION AUTHORITY OR ELECTRICIAN. THIS MAY BE PARTICULARLY IMPORTANT IN RURAL AREAS.

Avis Aux Utilisateurs Du Réseau Téléphonique Canadien

AVIS: Le présent matériel est conforme aux spécifications techniques d’Industrie Canada applicables au matériel terminal. Cette conformité est confirmée par le numéro d’enregistrement. Le sigle IC, placé devant le numéro d’enregistrement, signifie que l’enregistrement s’est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d’Industrie Canada ont été respectées. Il n’implique pas qu’Industrie Canada a approuvé le matériel.

Avant de connecter cet équipement à une ligne téléphonique, l'utilisateur doit vérifier s'il est permis de connecter cet équipement aux installations de télécommunications locales. L'utilisateur est averti que même la conformité aux normes de certification ne peut dans certains cas empêcher la dégradation du service.

Les réparations de l'équipement de télécommunications doivent être effectuées par un service de maintenance agréé au Canada. Toute réparation ou modification, qui n'est pas expressément approuvée par Fujitsu, ou toute défaillance de l'équipement peut entraîner la compagnie de télécommunications à exiger que l'utilisateur déconnecte l'équipement de la ligne téléphonique.

AVIS: L'indice d'équivalence de la sonnerie (IES) du présent matériel est de 0.1B. L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

POUR ASSURER LA SÉCURITÉ, LES UTILISATEURS DOIVENT VÉRIFIER QUE LA PRISE DE TERRE DU SERVICE D'ÉLECTRICITÉ, LES LIGNES TÉLPHONIQUES ET LES CONDUITES D'EAU MÉTALLIQUES SONT CONNECTÉES ENSEMBLE. LES UTILISATEURS NE DOIVENT PAS TENTER D'ÉTABLIR CES CONNEXIONS EUX-MÊMES, MAIS DOIVENT CONTACTER LES SERVICES D'INSPECTION D'INSTALLATIONS ÉLECTRIQUES APPROPRIÉS OU UN ÉLECTRICIEN. CECI PEUT ÊTRE PARTICULIÈREMENT IMPORTANT EN RÉGIONS RURALES.

Appendix A: WLAN User's Guide

FCC Regulatory Information

Please note the following regulatory information related to the optional wireless LAN device.

Regulatory Notes and Statements

Wireless LAN, Health and Authorization for use

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions, however, are far much less than the electromagnetic energy emissions from wireless devices such as mobile phones. Wireless LAN devices are safe for use by consumers because they operate within the guidelines found in radio frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments, such as:

- On board an airplane, or
- In an explosive environment, or
- In situations where the interference risk to other devices or services is perceived or identified as harmful.

In cases in which the policy regarding use of Wireless LAN devices in specific environments is not clear (e.g., airports, hospitals, chemical/oil/gas industrial plants, private buildings), obtain authorization to use these devices prior to operating the equipment.

Regulatory Information/Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution or attachment of connecting cables and equipment other than those specified by the manufacturer. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. The manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failure to comply with these guidelines.

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

For IEEE 802.11a Wireless LAN: For operation within 5.15~5.25 GHz frequency range, it is restricted to indoor environments, and the antenna of this device must be integral.

Federal Communications Commission statement

This device complies with Part 15 of FCC Rules.

Operation is subject to the following two conditions: (1) This device may not cause interference, and, (2) This device must accept any interference, including interference that may cause undesired operation of this device.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the equipment and the receiver.
3. Connect the equipment to an outlet on a circuit different from the one the receiver is connected to.
4. Consult the dealer or an experienced radio/TV technician for help.

FCC Radio Frequency Exposure statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the Wireless LAN antenna (located on the top edge of the LCD screen) and your body. The transmitters in this device must not be co-located or operated in conjunction with any other antenna or transmitter.

Export restrictions

This product or software contains encryption code which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license. This device complies with Part 15 of FCC Rules., as well as ICES 003 B / NMB 003 B. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. Modifications not expressly authorized by Fujitsu Computer Systems Corporation may invalidate the user's right to operate this equipment.

Canadian Notice

The device for the 5150 - 5250 MHz band is only for indoor usage to reduce the potential for harmful interference to co-channel mobile satellite systems.

The maximum antenna gain of 6 dBi permitted (for devices in the 5250 - 5350 MHz, 5470 - 5725 MHz and 5725 - 5825 MHz bands) to comply with the e.i.r.p. limit as stated in A9.2 of RSS210.

In addition, users are cautioned to take note that high power radars are allocated as primary users (meaning they have priority) of 5250 - 5350 MHz and 5650 - 5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

Before Using the Wireless LAN

This manual describes the procedures required to properly setup and configure the optional integrated Wireless LAN Mini Card device (referred to as “WLAN device” in the rest of the manual). Before using the WLAN device, read this manual carefully to ensure it's correct operation.

Wireless LAN Devices Covered by this Document

This document is applicable to systems containing the following WLAN device

- Atheros SuperAG Wireless LAN (802.11a+b/g)

Characteristics of the WLAN Device

- The WLAN device is a Mini Card attached to the mainboard of the mobile computer.
- It is a dual-band radio that operates in two license-free RF bands, therefore eliminating the need to procure an FCC license to operate. It operates in the 2.4GHz Industrial, Scientific, and Medical (ISM) RF band. Additionally, the Atheros device operates in the lower, middle, and upper bands of the 5GHz Unlicensed National Information Infrastructure (UNII) bands.
- The WLAN device is capable of three operating modes, IEEE802.11a, IEEE802.11b and IEEE802.11g, wireless LAN standards governed by the IEEE (Institute of Electronics and Electrical Engineers).
- Encoding of data is modulated using Direct Sequence Spread Spectrum (DSSS) and Complementary Code Keying (CCK) when the WLAN device is operating in IEEE 802.11b mode and Orthogonal Frequency Division Multiplexing (OFDM) when operating in IEEE802.11a or IEEE802.11g mode.
- The WLAN device is Wi-Fi certified and operates at the maximum data transfer rate of 54 Mbps in IEEE802.11a or IEEE802.11g mode and 11 Mbps in IEEE802.11b mode.
- The WLAN device supports the following encryption methods - WEP, TKIP, CKIP, and AES encryption.

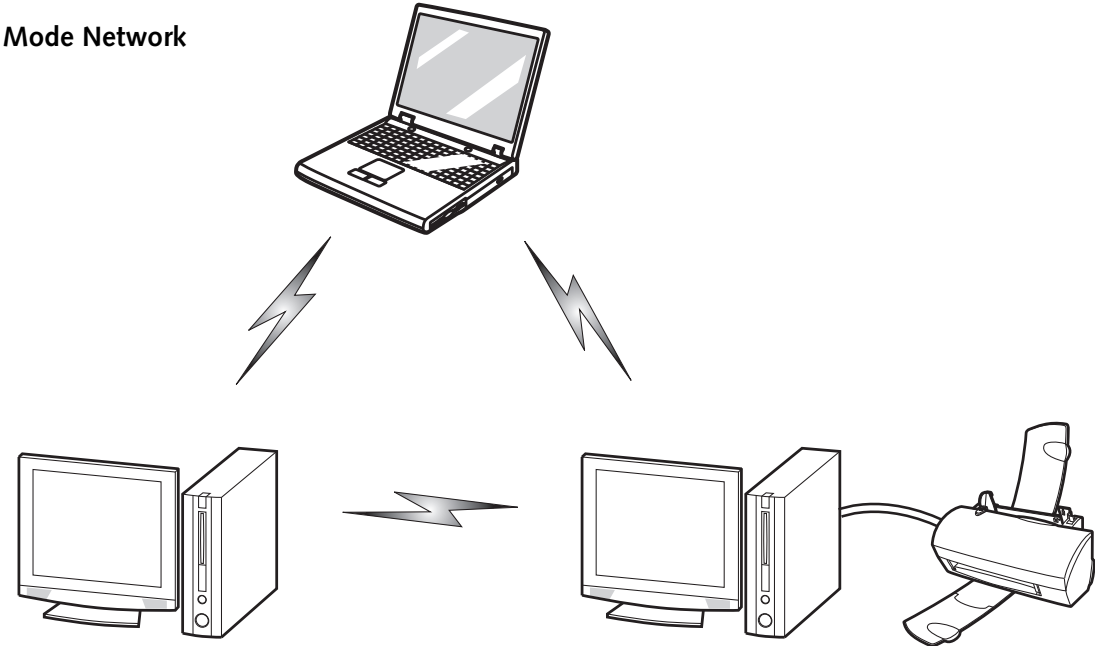
Wireless LAN Modes Using this Device

Ad Hoc Mode

“Ad Hoc Mode” refers to a wireless network architecture where wireless network connectivity between multiple computers is established without a central wireless network device, typically known as Access Point(s). Connectivity is accomplished using only client devices in a peer-to-peer fashion. That is why Ad Hoc networks are also known as peer-to-peer networks. Ad Hoc networks are an easy and inexpensive method for establishing network connectivity between multiple computers.

Ad Hoc mode requires that the SSID (service set identifier), network authentication, and encryption key settings are identically configured on all computers in the Ad Hoc network.

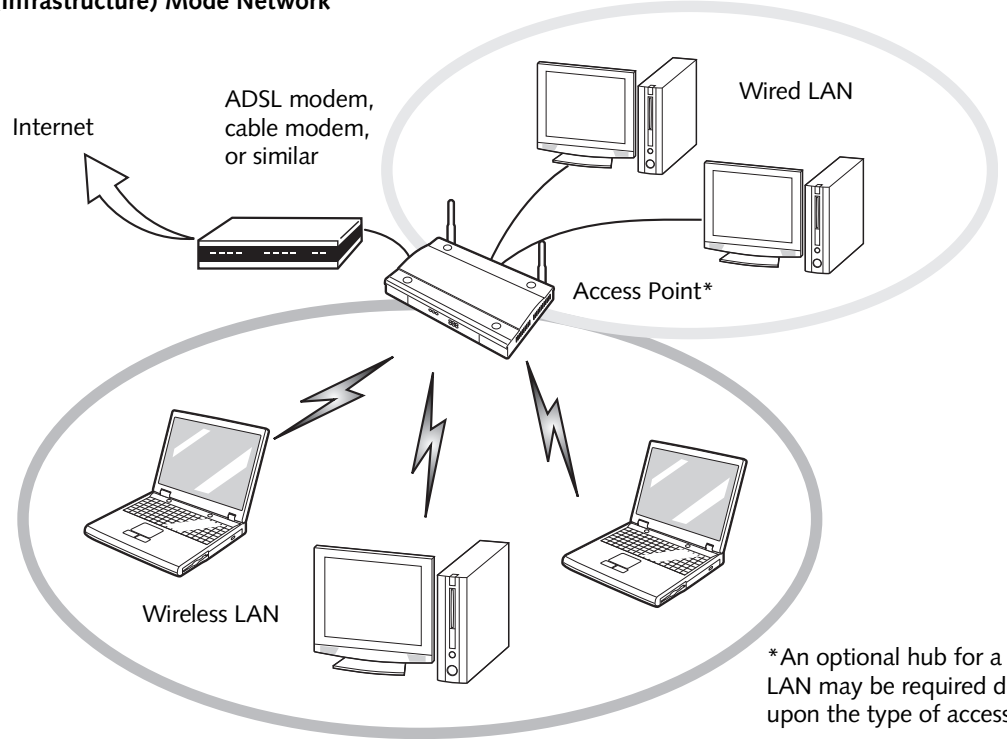
Ad Hoc Mode Network



Access Point (Infrastructure) Mode

Infrastructure mode refers to a wireless network architecture in which devices communicate with wireless or wired network devices by communicating through an Access Point. In infrastructure mode, wireless devices can communicate with each other or with a wired network. Corporate wireless networks operate in infrastructure mode because they require access to the wired LAN in order to access computers, devices, and services such as file servers, printers, and databases.

Access Point (Infrastructure) Mode Network



How to Handle This Device

The WLAN device comes pre-installed in your mobile computer. Under normal circumstances, it should not be necessary for you to remove or re-install it. The operating system that your mobile computer comes with has been pre-configured to support the WLAN device.

Wireless Network Considerations

- The Atheros WLAN device supports IEEE802.11a/b/g and operates in the 2.4GHz ISM band and the 5 GHz UNII bands.
- Microwave ovens will interfere with the operation of WLAN device as microwave ovens operate in the same 2.4GHz frequency range that IEEE802.11b/g devices operate in. Interference by microwaves does not occur with IEEE802.11a radio which operates in the 5 GHz RF band.
- Wireless devices that transmit in the 2.4GHz frequency range may interfere with the operation of WLAN devices in IEEE802.11b/g modes. Symptoms of interference include reduced throughput, intermittent disconnects, and large amounts of frame errors. It is HIGHLY recommended that these interfering devices be powered off to ensure the proper operation of the WLAN device.

Deactivating the WLAN Device

Disconnecting the WLAN device may be desired in certain circumstances (to extend battery life) or where certain environments require it (i.e., hospitals, clinics, airplanes, etc.). The WLAN device can be deactivated by using the Wireless On/Off Switch, and it can be disconnected in Windows using the WLAN icon in the system tray (Note that disconnecting via the icon in the system tray does not turn off the radio; it continues to transmit and receive even though it's not connected.).

BEFORE USING THE WIRELESS LAN DEVICE, YOU MUST FIRST INSTALL CLICKME! TO ENSURE THAT THE CORRECT SOFTWARE FOR YOUR DEVICE IS INSTALLED. SEE SEE "INSTALLING CLICK ME!" ON PAGE 45.

Deactivation using the Wireless LAN/Bluetooth On/Off Switch

The WLAN device can be deactivated quickly and efficiently by toggling the Wireless LAN/Bluetooth On/Off Switch to the Off position. The switch has no effect on non-Wireless LAN models.

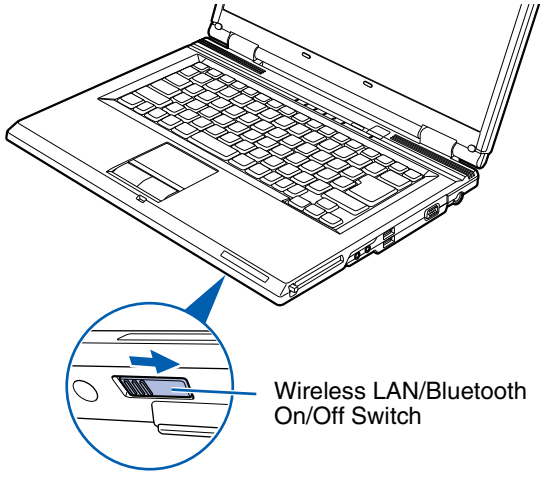


Figure 33. Wireless LAN/Bluetooth On/Off Switch Location

Disconnection Using the Icon in the Taskbar

Note that disconnecting via the icon in the system tray does not turn off the radio; it continues to transmit and receive even though it's not connected.

1. Right-click the WLAN icon in the taskbar at the bottom right of your screen.
2. Choose Disconnect from a network.

Activating the WLAN Device

Activation of the WLAN device can be accomplished using the same methods as the deactivation process

- Using the Wireless On/Off Switch
- In Windows, by right-clicking the WLAN icon then clicking "Connect to a network"

Configuration of the WLAN Device

The optional WLAN device can be configured to establish wireless network connectivity using the software that is built into Windows Vista. Support for most industry standard security solutions is contained in this software.

Pre-defined parameters will be required for this procedure. Please consult with your network administrator for these parameters:

Configuring the WLAN Using Windows Vista

1. Click the Start button, then select Control Panel.
2. If the Control Panel is not in Classic View, select Classic View from the left panel. Double-click the Network and Sharing Center icon.
3. Select “Manage wireless networks” from the left panel.
4. Click on the [Add] button.
5. Depending upon what type of connection you would like to make, make a selection. For an infrastructure network, select “Manually create a network profile. For ad hoc network, select “Create an ad hoc network”.
6. Enter the required information. It may be necessary to consult with your network administrator for some of the information.
7. In the event you require assistance, go to the Network and Sharing Center window (Start -> Control Panel -> Network and Sharing Center), and type in relevant keywords in the Search box.

Connecting to a Network

After you have configured your computer, you can connect to an active network by performing the following steps:

1. Click on the WLAN icon in the system tray.
2. Select “Connect to a network”.
3. Select a network from the list that appears, and click the [Connect] button.

Connection to the network

After you have configured your computer, you can connect to an active network by clicking on the Wireless Network icon in the system tray:

Troubleshooting the WLAN

Troubleshooting Table

Causes and countermeasures for troubles you may encounter while using your wireless LAN are described in the following table.

Problem	Possible Cause	Possible Solution
Unavailable network connection	Incorrect network name (SSID) or network key	**Ad hoc connection:** verify that the network names (SSID's) and network keys (WEP) of all computers to be connected have been configured correctly. SSID's and WEP key values must be identical on each machine. **Access Point (Infrastructure) connection:** set the network name (SSID) and network key to the same values as those of the access point. Set the Network Authentication value identically to that of the Access Point. Please consult your network administrator for this value, if necessary.
	Weak received signal strength and/or link quality	Ad hoc connection: Retry connection after shortening the distance to the destination computer or removing any obstacles for better sight. Access Point (Infrastructure) connection: Retry connection after shortening the distance to the access point or removing any obstacles for better sight.

Problem	Possible Cause	Possible Solution
Unavailable network connection (continued)	The WLAN device has been deactivated or disabled	Check if the wireless switch is turned ON. Also verify “Disable Radio” is not checked in “Network setting” window.
	The computer to be connected is turned off	Check if the computer to be connected is turned ON.
	RF interference from Access Points or other wireless networks	The use of identical or overlapping RF channels can cause interference with the operation of the WLAN device. Change the channel of your Access Point to a channel that does not overlap with the interfering device.
	Wireless network authentication has failed	Re-check your Network Authentication, Encryption, and Security settings. Incorrectly configured security settings such as an incorrectly typed WEP key, a misconfigured LEAP username, or an incorrectly chosen authentication method will cause the LAN device to associate but not authenticate to the wireless network.
	Incorrectly configured network settings	Recheck the configuration of your network settings.
	Incorrect IP address configuration	This only applies to networks using static IP addresses. Please contact your network administrator for the correct settings.

WLAN Specifications

Item	Specification
Type of network	• Atheros Super AG (802.11a+b/g) WLAN device conforms to IEEE 802.11a and 802.11b/g (Wi-Fi based)*
Transfer rate	• (Automatic switching) IEEE 802.11a/g: 54 Mbps maximum data rate (108 Mbps maximum data rate with compatible access points) • IEEE 802.11b: 11 Mbps maximum data rate
Active frequency	• 802.11b/g: 2400~2473 MHz • 802.11a: 5050 ~ 5850 MHz
Number of channels	• 802.11a: 8 independent channels • 802.11b/g: 11 channels, 3 non-overlapping channels
Typical operating distances**	• 802.11a: 40 ft. (12 m) @ 54 Mbps; 300 ft. (91 m) @ 6 Mbps • 802.11b: 100 ft. (30 m) @ 11 Mbps; 300 ft. (91 m) @ 1 Mbps • 802.11g: 100 ft. (30 m) @ 54 Mbps; 300 ft. (91 m) @ 1 Mbps
Security	• Encryption Types - WEP, TKIP, AES***, WPA, WPA 1.0, WPA 2,CCX compliant • WPA 1.0 compliant • Encryption Key lengths Supported: 64 bits, 128 bits, and 152 bits (Atheros module using AES encryption only) • 802.1x/EAP
Maximum recommended number of computers to be connected over wireless LAN (during ad hoc connection)	10 units or less ****

*

"Wi-Fi based" indicates that the interconnectivity test of the organization which guarantees the interconnectivity of wireless LAN (Wi-Fi Alliance) has been passed.

**

The communication ranges shown above will increase or decrease depending on factors such as number of walls, reflective material, or interference from external RF sources.

***

Encryption with network key (WEP) is performed using the above number of bits, however, users can set 40 bits/104 bits after subtracting the fixed length of 24 bits.

****

Depending on practical environments, the allowable number of computers to be connected may be decreased.

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